

THE CARE OF INFANTS IN INDIA.

A WORK FOR MOTHERS AND NURSES IN INDIA

UPON

The FEEDING and MANAGEMENT of INFANTS
in HEALTH and SICKNESS.

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PREFACE.

The high mortality among infants in India, of native as well as of European parentage, especially during the first few years of life, has convinced the writer of the need for a better knowledge concerning the management of babies in India. The excessive waste of life, with all its attendant sufferings, is in a large measure to be traced to errors which arise from ignorance of the simplest hygienic rules of dietary and nursing.

The advice given is mainly intended for Anglo-Indian mothers, but it is hoped that this little work will receive the attention, not only of such, but also of Hindu ladies and the better educated natives generally. The question of sound medical advice and good treatment for native women is being ably coped with by the Zenana Mission movement and the National Association for Supplying Medical Aid to Women in India. For these, ladies' hospitals have been established in many parts of the country, and either in them or in their homes native women have now the opportunity of receiving the best possible medical treatment for themselves and their infants at the hands of those of their own sex.

The work of introducing a knowledge of hygiene among the masses of the native peoples of India, where the women, for the most part, believe that almost all diseases are sent by angry gods, powerful demons, or evil spirits, is very difficult indeed, and advances can only be made in this direction side by side with general educational improvements. The splendid work which has been undertaken by the earnest and devoted workers of the Zenana Missions is gradually but surely making its influence felt. And it is by increased knowledge of the laws of life and health, and the disease-producing causes, that we may hope to bring about an improvement in the existing condition of things. Efforts made in this direction are producing their effects upon women of the higher castes who have been brought under their influence, and this good work must in time make itself felt among women generally ; but, as in all things in the East, progress is but slowly made.

But few remarks have been made upon the subject of infantile diseases, as their treatment is quite outside the objects of this little work, and belongs to the duties of the medical practitioner. The opinion is held by the writer that the custom of performing experiments upon children with quackeries is most reprehensible.

CHAPTER I.

THE IMPORTANCE OF NURSERY HYGIENE IN INDIA.

The Rearing of Healthy and Vigorous Children under the influence of a tropical climate is a question of the deepest interest to every mother in India, and the purpose of these pages is to state those measures which should be adopted in order to secure the healthiest and happiest conditions during early life. It is difficult to keep children healthy, to say nothing of making them vigorous.

The Sickness and High Rate of Mortality among Anglo-Indian infants is in part to be accounted for by the general absence of home surroundings, and by the existence of an environment foreign to the parents. But in a large measure much of the sickness and many of the early deaths are essentially preventable, for they are the results only too often of bad management.

In spite of the widespread belief that the climate alone of India is extremely fatal to children of European parentage, it must be stated that carefully collected statistics show that this, like most other vague and general impressions, is only relatively true. While in the past the infantile mortality in many parts of India has been enormously higher than that of European countries and the United States of America, yet careful

researches have shown that, although the teething period appears to be more trying in India, before and after that and up to the age of five years, the offsprings of European parents thrive at least as well in India as they do in colder countries.

Mortality not high from Infantile Diseases.

When it is remembered that the conditions which are favourable to the development of scrofulous constitutions are far less active in India than in cold climates, and when we also take into consideration the well-known fact that those essentially infantile complaints which claim so many victims in England—such as whooping cough, measles, and scarlet fever—are either unknown or contracted in such a mild form that they may not be considered serious, the death-rate in early infancy should be lower than in England; and so it doubtless would be if it were not for the counteracting influence of ignorance and the carelessness of those who have the charge of very young infants.

In India the Risk of Improper Feeding and Management of Children under five years of age is very much greater than in Great Britain; consequently, very much more care is necessary in safeguarding children against the effects of mismanagement. Such minor ailments as do not usually lead to serious consequences in cold climates may, in the tropics, produce fatal results in a very short time.

General Ignorance of Nursery Hygiene. Young mothers even at home are only too often entirely ignorant of the hygiene of the nursery and of the simplest scientific facts respecting the care and feeding of infants; while, at the same time, they usually have the advantage of experienced relations at hand to whom to turn for advice, and also the ready aid of good nurses and skilful medical men. In India, however, notwithstanding the increasing means of communication, a young mother at any isolated station is often at the

mercy of an ayah or ignorant servants. A superstitious Indian mother thinks that her baby is playing with the fairies, when it smiles or cries during sleep, little suspecting the same to be the result of an over-loaded stomach or disturbed digestion. A wise mother will never be led by a neighbour, no matter how reliable she may appear to be. The life at stake is hers to preserve, and hers alone is the responsibility of informing herself of the conditions most favourable for the health of her child.

The questions upon which a young mother in India should arm herself with knowledge embrace all those conditions which will determine the well-being of her baby; they consequently include simple hygienic rules about food and drink, cleanliness, clothing, and due protection from chills and damp, the sun and night air.

The object of this work is not to frighten mothers by stating the responsibilities and difficulties before them in India, but rather to enable them to cope with the situation with confidence, and to give such useful hints and advice as will buoy them up with a feeling of security, in periods of difficulty and danger.

Paramount Importance of Care in Feeding Infants. Every mother has sooner or later forced upon her notice the question of the selection of an artificial food for her baby. It may be that during the earlier periods of maternity she can supply her child with food, but a time comes when a substitute for mother's milk must be found. In India the tendency and ability of mothers to suckle their babies seems to be decreasing, and it therefore, in many cases, becomes necessary for mothers to employ some artificial substitute, for breast milk from birth. A mother may sometimes be guided in the right direction by her own knowledge, or the advice of friends with greater experience; but only too frequently young mothers in India

are ignorant of those simple truths which should guide them in the feeding of their little ones. Those blind rule-of-thumb practices, which are frequently followed by the ayah in feeding young children, cost thousands of infants' lives annually. A large proportion of these early deaths are due to diarrhoea, dysentery, convulsions, and wasting diseases. One important cause of this enormous amount of preventable disease and loss of life, with all its attendant pain and suffering, is to be found in the use of improper substitutes for breast milk. When we take into consideration the number of sickly children who survive with enfeebled constitutions by which they may be handicapped throughout life, and all the loss and misery which is thereby involved, the importance of a wider knowledge of the means of prevention must become at once apparent. It should be borne in mind that this sacrifice might be averted, and these victims of disease saved, by improved sanitary conditions, judicious clothing, proper feeding, good medical treatment, and generally enlightened parental care.

The Duty of Every Mother is obviously to inform herself of those elements of nursery hygiene which determine the life and health of her baby, a knowledge of which will enable her to rear a strong, healthy, and vigorous child from even the weak and sickly; whilst ignorance of the same may lead to pain and suffering, and may endanger the life of her little one. The materials for this knowledge exist; they consist largely of the hitherto unrecorded experiences of many mothers and medical men who have spent years in India, and they are also to be found scattered through the pages of works on hygiene and physiology. For a young mother in India such information is practically inaccessible, and, in consequence, antiquated practices are followed, without a knowledge of the causes at work for or against the result wished for.

CHAPTER II.

GROWTH AND FOOD IN EARLY INFANCY.

Rapid Increase in Weight in early Infancy.

A healthy baby, if born at its full time, weighs a little over seven pounds, and measures about eighteen inches. During the first three or four days of life it will, as a rule, lose weight, in most cases as much as from four to six ounces. After this, if properly fed, it will increase in weight day by day as its bones, flesh, nerves, and other structures are developing, until at the end of the first year it will weigh eighteen to twenty-two pounds. Under ordinary conditions an infant should nearly double its weight in six months, and treble it in a year. This remarkably rapid increase is quite unparalleled at any other stage of existence, and this fact enables us to gain some idea of the enormous amount of work which must be performed in changing the materials which are taken as food into the living body of the growing babe.

If a child does not increase at the rate of one pound a month during the first year of life and twelve ounces a month during the second year, its nutrition is not satisfactory.

The rate of increase in weight during early infancy of a healthy developing babe will be seen by comparing the figures in the following table :—

| Age. | Gain in Weight. | Total Weight. |
|------------------|-----------------|---------------|
| 1st Month | 13 oz. | 8 lb. |
| 2nd " | 30 " | 9 " 14 oz. |
| 3rd " | 27 " | 11 " 9 " |
| 4th " | 26 " | 13 " 3 " |
| 5th " | 21 " | 14 " 8 " |
| 6th " | 20 " | 15 " 12 " |
| 7th " | 17 " | 16 " 13 " |
| 8th " | 23 " | 18 " 4 " |
| 9th " | 22 " | 19 " 10 " |
| 10th " | 20 " | 20 " 14 " |
| 11th " | 11 " | 21 " 9 " |
| 12th " | 7 " | 22 " |

In early infancy the bones, at first quite soft and gristle-like, become more and more solid; the brain, muscles, lungs, and other organs rapidly increase in size, and each requires therefore large quantities of suitable nourishment for its growth and development. During the early period of infancy, however, there is comparatively little activity of mind and body, the infant's time being largely spent in sleep and the taking of nourishment.

The Natural Food of a Young Infant is unquestionably the milk of a healthy mother; and this consists of water, in which four different classes of bodies are present, viz., proteids, fat, milk-sugar, and salts.

The Proteid Material is so called because when milk is consumed as food this substance goes to form the really living parts of the body. This is mainly present in milk in the form of caseinogen, the body which gives rise, during the souring of cow's milk, to white clots or curds. Without proteid substances of some kind as food, life would be impossible, and since they furnish materials to the blood which are employed

for building up the living growing structures of the body, deficiency of these materials in an infant's diet makes itself soon evident; the child's development is interrupted, it becomes feeble and pallid, the flesh grows flabby and the disease-resisting strength is reduced.

The Fat of Milk furnishes to the blood materials which are required for the formation of many parts of the body, including brain and nerve. Some of the fat also undergoes chemical changes in the body, and so gives rise to the production of heat, thus aiding in keeping the body warm.

The Sugar of Milk (Lactose) is related to, but not identical with the substance which we ordinarily know as sugar. This supplies to the blood substances which are employed in the maintenance of its temperature, and which are also concerned in the formation of fat. From its chemical composition sugar-of-milk, like all other varieties of sugar, belongs to a class of bodies termed carbohydrates.

The Salts of Milk are the substances which would remain as ash after boiling away all the water and burning the proteid, fat and milk-sugar. They yield to the blood materials required in the formation of the bones, and different kinds of saline substance necessary for the life and the growth of all other structures.

The water of milk is the agent by which the constituents of milk after digestion are carried into the blood stream.

The Food Requirements of an Infant. Since the above are the materials furnished by nature, in the form of mother's milk, to build up the growing infant's body, next comes the question of the proportion of each. How much proteid matter does a child require? How much fat? How much milk-sugar? And here we find

our most satisfactory answer in the composition of human milk. Where this substance forms, as it should, the sole nourishment of an infant for the first nine or ten months of its life, it must be by the alteration and modification of its components that the widely different structures of the rapidly-growing body are built.

Components of Human Milk.

| | | | | | | |
|---------------------------|-----|-----|-----|-------|----|-------|
| Water | ... | ... | ... | 87.24 | to | 90.58 |
| Carbohydrates (Lactose) | | | | 3.15 | „ | 6.09 |
| Fat | ... | ... | ... | 2.67 | „ | 4.03 |
| Proteid Matters (Curd)... | | | | 2.91 | „ | 3.92 |
| Salt | .. | .. | .. | 0.14 | „ | 0.28 |

Where the supply of the natural sustenance of a young baby, viz., breast milk, fails, as it so frequently does in India in the case of the Anglo-Indian mother, it follows that the artificial substitute which should be resorted to must conform as closely as possible with mother's milk, both in its composition and in its properties. Fresh cow's or buffalo's milk is the best available basis for such a substitute for breast milk, and it should be modified by means of Mellin's Food.

CHAPTER III.

METHODS OF FEEDING INFANTS.

Different Methods of Feeding Infants. From birth there are available three chief methods of feeding an infant :—

1. *Breast-feeding*, either by the mother or wet-nurse. The former is the natural method, and should in all cases be encouraged. The latter is only exceptionally possible, and is open to many objections in India.

2. *Artificial feeding*, where Mellin's Food is employed to modify buffalo's, cow's or goat's milk, so as to produce a diet which is adapted for use from birth.

3. *Combined feeding*, where both breast feeding and Mellin's Food, prepared to meet the requirements of the child, are resorted to.

Importance of Breast Feeding. Many circumstances have to be taken into consideration in deciding which of these methods shall be adopted. Every mother should, however, make a serious effort to nurse her infant at the breast. It rarely happens that deficiency of the mother's milk amounts to absolute inability to suckle her child, and it is her duty to carry out the natural function to the full extent of her capacity how-

ever partially she may be able to discharge the task. In most cases where the milk supply is inadequate to the demands of the infant, she will be able to suckle twice a day for a few weeks at least, and for the rest artificial feeding must be resorted to. The demands upon the system of a nursing mother are very great, and she should be supplied with a generous diet of simple foods, with an abundance of milk and a liberal supply of gruels made with milk. Mellin's Lacto is usually much relished by nursing mothers as a food beverage, and its use is attended with marked benefit, for it rapidly supplies to the blood materials used in the production of milk, and so stimulates the flow and improves the quality. It should be prepared by first mixing one or two tablespoonfuls of the Lacto in a little hot, but not boiling, water, then this should be stirred with hot water until a fluid to suit the taste is obtained.

The Value of Mellin's Food for Nursing Mothers is very high indeed. When mixed with fresh cow's milk it is useful where the demand exists for a supply of material for the elaboration of milk, and it is employed with especially good results where either the milk is poor in quality or deficient in quantity. Its use in such cases is invariably attended with marked improvement in the flow and character of the milk.

Foods and Drinks to be avoided during Nursing. The diet of the nursing mother should be varied in character; all ordinary easily-digested fresh animal foods and cooked vegetables and fruits in season may be taken in moderation, but an excess of meat or green vegetables should be avoided. She should eschew hot curries and highly-seasoned dishes of all kinds, radishes, salads and uncooked vegetables generally, and tinned foods of all kinds. Strong tea or coffee and alcoholic drinks are also to be avoided. There is a prejudice on the part of nurses and mothers in favour of the use of beer, stout and wine during the nursing period; in fact

they are by some regarded as essential, and it is alleged that milk is produced by their aid. It cannot be too strongly urged that alcoholic liquors do not lead in any way to the formation of milk, and their use can in no way compensate for the proper admixture of food substances which is necessary for the supply to the blood of those raw materials from which milk has to be produced. It is true that a nursing mother requires more fluid than others, for she is frequently thirsty. Weak tea and coffee are less objectionable than alcoholic drinks, and they may be allowed once a day. To relieve the thirst it is far preferable to give as drink, gruel, barley water, sherbet, cocoa nut milk, milk and water, or cocoa. Mellin's Lacto taken alone, as directed above, or flavoured with cocoa, is also to be recommended. Besides being drinks these liquids are really nutritious and assist in the formation of milk.

Importance of Regular Nursing. It is of the utmost importance for the welfare of both mother and child that regular habits should be induced. The wear and tear which are usually incidental to the nursing period, and which constitute such a strain upon the physical and nervous forces of the young mother, may be avoided, or very largely reduced, by training the child from the very first into regular habits.

| BREAST FEEDING. | Interval between meals from 7 a.m. to a p.m. | Number of Night Meals from 9 p.m. to 7 a.m. | Number of Meals in 24 hours. |
|----------------------------------|--|--|---------------------------------------|
| First day | 6 hours | | 4 |
| Second day | 4 hours | | 6 |
| Third day to end of 1st month | 2 hours | | 10 |
| First month to end of 3rd month | 2½ hours | | 8 |
| Third month to end of 5th month | 3 hours | | 7 |
| Fifth month to end of 12th month | 3 hours | | 6 |

Breast and Artificial Feeding combined.

Mixed breast and bottle feeding may be advantageously resorted to in all cases where the supply of breast milk appears insufficient or where the milk is poor in quality, and the child makes in consequence but very slow progress; also to reduce the strain upon the mother involved in continuous nursing. Especially may this plan be adopted during the later months of nursing, in order to facilitate gradual weaning. For the methods of preparing the artificial food to alternate with breast milk see Chapter VI.

It is an excellent plan and one to be strongly recommended in India to **"teach"** an infant, after he is about ten days old, **to feed from the bottle.** For it frequently happens that a mother or wet-nurse may be rendered temporarily unfit for suckling the infant in consequence of intermittent fever and other complaints. A useful mixture for this purpose is the following: One dessertspoonful of milk mixed with four or five times its bulk of warm water which has been previously boiled, to which half a teaspoonful of Mellin's Food has been added.

Breast Milk the best. Normal mother's milk is undoubtedly both the natural and the best food for infants, on account of its digestibility and the ease with which its products may be rapidly made use of in the infant's system for the nourishment of every part.

Where Mother's Milk cannot be employed.

Unfortunately, many mothers are quite unable to suckle their babies, and the following conditions absolutely necessitate the adoption of some method of hand rearing:—

1. Where the quantity of the breast milk is insufficient. The indications of this condition are numerous. In such cases the child will take the breast ravenously, but, failing to obtain sufficient food, soon stops and cries. In a few days the

infant becomes peevish, pale and thin, and begins to exhibit the evidences of under-feeding. Such conditions, like all other forms of malnutrition, always predispose a child to disease. In such a case, however, mixed feeding must be resorted to, and the breast meals may be made to alternate with the bottle, Mellin's Food being given prepared according to the directions.

2. Where the quality of the milk is poor, it ceases to rank as food, and by continuing to suckle a child with it the stomach is filled with a fluid which is incapable of affording sufficient nourishment; the flesh soon becomes flabby, and wind, diarrhoea, or constipation occur.

3. Where the mother is suffering from consumption, or inherits a tendency to this disease. The weight of evidence tends to the conclusion that the disease may be transmitted to the infant through the breast milk.

4. Where the mother is suffering from any other disease, or in a delicate state of health, and is taking medicines. The milk becomes altered, and will invariably disagree with the child.

5. Where the mother's position or occupation in life interferes with the full performance of the duties of nursing. The feeding becomes irregular, and the milk will vary in character, and consequently disagree with the infant.

6. Where a supply of mother's milk is unavailable. For instance, in most cases where the flow of milk is obstructed by retracted nipples, or in the event of the mother's death.

A mother should always endeavour to suckle her child herself; but when she is unable to do so from any of the causes mentioned above, then some form of artificial feeding becomes necessary, and that method will be most successful, and attended with the best

results, which most nearly conforms with the natural conditions of dietary.

Formerly the alternative was the wet-nurse, and in India even to-day this is the method resorted to in many cases. This plan is open to so many objections, that in England the system has been practically stamped out by a healthier condition of public knowledge. A native wet nurse is something to be avoided by a mother in India, since it is almost impossible to discover the antecedents of those who proffer themselves for such duties.

Nurses in India are very fond of giving condensed milk as a substitute for mother's milk, but it has been observed that where attempts have been made to bring up children entirely upon this form of food they are not so hardy as children reared on a more natural diet.

The Artificial Feeding of Infants from Birth.

For hand-reared infants the food best adapted must fulfil the following conditions:—

1. It must contain substances which closely resemble the components of breast milk in quality and quantity.
2. The total quantity given during twenty-four hours must be such as to represent the nutritive value of the amount of breast milk which would under ordinary conditions be given to the infant in the same time.

The Scales as a Test of Baby's Progress. Three-fourths of the infants who die under the age of one year are those fed artificially, and most of these deaths are attributable to errors in feeding or intestinal disorders arising from such causes as milk which has become tainted by exposure, infected by flies, or soured by contact with soiled utensils and feeders. A thriving baby, fed artificially as directed in Chapter VI., will appear bright, happy and contented, and will steadily increase in size and weight. It is important to remember that the scales

are the best means by which a baby's progress may be estimated. After the first three days, if kept upon a well-balanced and suitable diet, an infant should increase in weight at the rate shown below :—

| Age. | Total Food taken per Day. | Gain in Weight. | Total Weight. |
|-----------|------------------------------|--------------------|---------------|
| 1st Month | 13 to 15 oz. | 13 oz. | 8 lb. |
| 2nd " | 20 " 24 " | 30 " | 9 " 14 oz. |
| 3rd " | 24 " 30 " | 27 " | 11 " 9 " |
| 4th " | 30 " 34 " | 26 " | 13 " 3 " |
| 5th " | 34 " 36 " | 21 " | 14 " 8 " |
| 6th " | 36 " 40 " | 20 " | 15 " 12 " |
| 7th " | 40 ozs. and upwards. | 17 " | 16 " 13 " |
| 8th " | " " | 23 " | 18 " 4 " |
| 9th " | " " | 22 " | 19 " 10 " |
| 10th " | " " | 20 " | 20 " 14 " |
| 11th " | " " | 11 " | 21 " 9 " |
| 12th " | " " | 7 " | 22 " |

Care in Selecting an Artificial Food. The infant must be fed in such a way as to avoid not only the immediate dangers associated with diarrhoea and acute indigestion, but also the more remote ones of chronic indigestion, scurvy and rickets, and those various complaints which accompany malnutrition. These last it must be remembered are the most general predisposing causes of sickness in early infancy.

Dangers attending Hand-rearing. One difficulty frequently attending the artificial feeding of infants is that some method of feeding which is apparently accompanied by marked improvement so far as superficial and casual observations are concerned, may in reality be so essentially wrong as to undermine the constitution of the child.

It is only allowable to form an opinion of any method of artificial feeding by the results obtained in a large number of cases, and not by a few exceptional cases which may have done well. It should be remembered that some infants of specially robust constitution on the one hand have thriven well in spite of bad methods of

feeding, and not in consequence of the same, while on the other hand the lives of very many perfectly healthy infants are yearly sacrificed directly or indirectly as the result of improper feeding.

In this connection it is not to be forgotten that Mellin's Food is a preparation which has been employed with success throughout the world. Medical testimony unites with public experience, and both are supported by the opinion of analysts, that this preparation when prepared as directed yields a perfect substitute for breast milk from birth.

CHAPTER IV.

COW'S MILK AS FOOD FOR INFANTS.

Artificial Feeding. The question of the preparation of an artificial food specially adapted to the peculiar digestive conditions of an infant has been scientifically studied during recent years. With a wider knowledge of physiological laws, and a deeper insight into the composition of foods and the changes which they undergo during digestion, it is becoming more generally recognized that the value of any "food" must be measured chiefly by what it yields to the body rather than merely by what it contains.

Substitute for Breast Milk. Healthy mother's milk may be regarded as the ideal and perfect food for a baby; an artificial food should therefore resemble this very nearly both in composition and properties. Such food materials as arrowroot, cornflour, potatoes, bread, and all others containing starchy substances, no matter how carefully they may have been prepared, are so essentially unlike mother's milk that when used they act during early infancy as irritants, and are in reality poisonous.

Infants cannot digest Starchy Foods. Mother's milk, the natural food of a very young infant, contains no starchy matter, but a kind of sugar known as lactose. The starchy substances of bread, potatoes and other vegetable foods are converted into a variety of sugar in the body of the mother. Nature does not provide at this early stage of life any material by which infants are able to digest starch; yet most artificial

foods sold for the use of infants, with profound indifference to the teaching of both physiology and chemistry, have starchy substances or even crude flour as their chief components. No material which tends to thicken the liquid when added to milk or water can possibly be considered suitable as an artificial food for very young infants. Mellin's Food is, however, a notable exception, for this preparation is perfectly free from starch; it requires no cooking and at once dissolves completely in cold or hot water.

Essentials of a Perfect Infant's Food. It should be remembered that the digestive organs of an infant are exceedingly delicate, and liable to be deranged by apparently trifling causes; but the use of a diet which conforms with the following conditions will be attended with satisfactory results:—

- 1.—The artificial food must contain the substances required for the nutrition of all parts of the infant's frame in the proper proportion.
- 2.—The constituents of the food should be in such a form that the babe is able with ease to digest and assimilate them.

The Milk of different Animals compared with Human Milk. All milks resemble each other in general composition, and the following table shows the comparative composition of human milk with others which are employed more or less in feeding infants; but cow's and buffalo's milk alone are practically available for this purpose in India.

| In 100 Parts. | Water. | Proteids. | Fats. | Lactose. | Salts. |
|-----------------|--------|-----------|-------|----------|--------|
| Human Milk ... | 88.90 | 3.42 | 3.33 | 4.55 | 0.21 |
| Ass's „ ... | 89.01 | 3.57 | 1.85 | 4.50 | 0.55 |
| Cow's „ ... | 87.5 | 4.21 | 3.82 | 3.67 | 0.71 |
| Goat's „ ... | 86.85 | 3.79 | 4.34 | 3.78 | 0.65 |
| Buffalo's „ ... | 84.10 | 4.00 | 7.10 | 4.00 | 0.80 |

Diluted cow's or buffalo's milk very nearly resembles mother's milk in composition, but there are several objections to the use of either of these alone.

1.—**The Curd of cow's milk is more difficult to digest than that of human milk.** The total proteid material in cow's milk is about one-third greater than in human milk. The proteid substances are of two kinds, viz., caseinogen and albumen. In human milk the proportion of this albumen is greater than in cow's milk. The main difficulty in the digestion of cow's milk is due to the fact that the caseinogen is largely converted into a curd-like clot in the stomach, where, as well as in the intestines, it often acts as an irritant.

2.—**Cow's milk contains less milk-sugar than human milk;** the latter contains one-seventh to one-fifth more of milk-sugar than the former.

3.—**Buffalo's milk is too rich in fat and curd** to serve as a substitute for mother's milk. It must therefore be modified in order to render it suitable for infants.

4.—**Cow's milk is faintly acid, whilst human milk is neutral or alkaline.** The milk of stall-fed cows has invariably some acidity; while that obtained from pasture-fed animals is often neutral or alkaline. Milk with an acid reaction is never so wholesome for infants, and when in this condition it very frequently produces derangement of the digestive organs. Where Mellin's Food is employed with cow's milk it may happen that the milk supplied is so very acid that a little lime-water must be added with the Mellin's Food, although usually the Mellin's Food will impart the desirable alkalinity.

Condensed Milk. The immense variability in the composition of the substances which bear the name "Condensed Milk," apart from any other considerations, at once renders them unsafe to use continuously as substitutes for fresh cow's milk in the feeding of infants. In India, where it is so difficult to preserve fresh milk, the more reliable unsweetened brands of condensed milk may, however, prove serviceable for temporary use in special cases.

The use of Mellin's Food with Dried Milk for Infant Feeding. In those cases where it is impossible to obtain a supply of fresh cow's milk, reliable in quality and adequate in quantity, dried or evaporated whole milk may be found very satisfactory for infant feeding when modified with Mellin's Food.

Concentrated whole milks—that is, those from which the water has been wholly or partially abstracted but from which the cream has not been previously removed—may be obtained either in the condition of a dry powder, when they are known as “dried milks,” or in syrup form, when they are usually spoken of as “evaporated milks.” There are a number of brands of these dried and evaporated whole milks upon the market, the analyses of which vary considerably, but when diluted and prepared for use in accordance with the directions given by the manufacturers, these variations are practically negligible.

Whole milks, whether in dried powders or in the syrup form, are not to be confounded with the products generally sold either under the name of condensed milk or dried skim milks which latter are offered for sale in syrup form, and usually contain added cane sugar. The variability in the composition of condensed milks, apart from all other considerations, renders them unsatisfactory as a basis for the preparation of an artificial diet for an infant.

The following suggested mixtures are based upon averages taken from analyses of the best known brands of dried whole milk and unsweetened evaporated milks forming the chief source of supply of these products as sold throughout the world.

If there is any doubt as to the purity of the water available, it must be boiled and cooled before use.

To prepare the Mixture for Infant Use.

Mix sufficient of the dried or evaporated milk with water as directed by the manufacturer.

Dissolve the Mellin's Food in the quantity of water recommended in the directions.

Next add to the dissolved Mellin's Food the prepared milk.

Heat to the required temperature. Do not boil. No cooking is required. Do not add sugar.

Directions for use From One to Six Months.

Each of the following mixtures will make up about sixteen fluid ounces of prepared food. The amount usually to be given at each meal is stated below and the intervals between the feedings in normal cases are given in a separate table on page 11.

| Age of Infant. | TABLE SPOONFULS Mellin's Food. | FLUID OUNCES Evaporated Milk, Mixed for Use. | FLUID OUNCES Water. | Amount of prepared food to be given at each meal. TABLESPOONFULS. |
|--------------------|--------------------------------|--|---------------------|---|
| 1 Month or younger | 3 level | 4 | 12 | 4 to 5 |
| 2 Months | 3 " | 6½ | 9½ | 6 to 7 |
| 3 Months | 3 " | 8 | 8 | 7 to 8 |
| 4 Months | 3 " | 9½ | 6½ | 8 to 9 |
| 5 Months | 3½ " | 11 | 5 | 10 to 11 |
| 6 Months | 3½ " | 12 | 4 | 10 to 12 |

The milk modification suggested in the above formula for a six months old baby is of sufficient strength for the remaining period of bottle feeding, additional nourishment being obtained as the demand grows by increasing the amount taken at each meal, that is, 6½ ounces at seven months, 7 ounces through the eighth and ninth months, 8½ ounces at ten months, and then 9 ounces for the balance of the time of bottle feeding. If, however, the baby is not satisfied, the milk may be gradually increased and more Mellin's Food may be added to meet the requirements in special cases. Beginning with the tenth month, and thereafter, the intervals of feeding should be lengthened to four hours.

When the baby reaches three months of age, give a teaspoonful of orange juice daily, one hour before the midday feeding.

It is to be understood that these evaporated milk mixtures are suggested for use **only** when good, fresh milk is unobtainable, and it should be borne in mind that evaporated milk needs to be modified, just as fresh milk needs to be modified, before it is suitable for infant feeding.

Mellin's Food, as the modifier, adds to the diluted evaporated milk the carbohydrates in the proper proportions of maltose and dextrins, furnishes the alkaline salts, softens the curd and makes possible the desired balance of nitrogenous to non-nitrogenous food elements, as will be seen from the analyses.

These directions are prepared to meet the baby's requirements in average cases under normal conditions, but every child is more or less a law unto himself. Some children are strong and vigorous with active powers of digestion and ready assimilation, others are weak and sickly with enfeebled digestion and low powers of assimilation, so that rules which are good and may be generally applicable are not so in exceptional cases. It must be remembered that Mellin's Food is a Food and not a medicine, and therefore there are possible wide ranges of variation in its successful use, and a little patient experiment on the part of the mother or nurse will soon demonstrate the variation best suited to the needs of any particular child.

"Sterilized Milk" is produced by boiling milk, and although the process destroys those germs which give rise to putrefactive changes in the milk, and those also which are associated with certain diseases, yet it has its disadvantages, for the flavour of the milk is changed, the fine division of the fatty particles is destroyed, and the curd materials are rendered more difficult to digest. It must be borne in mind that the long use of such milk is attended with danger to the health of the child, its continued use being associated with scurvy. When fresh milk is not available Mellin's Lacto will be found a most satisfactory food, the milk in this preparation having been already modified by Mellin's Food during manufacture.

"Pasteurized Milk" is produced by keeping the liquid at a temperature of 68°C (155°F) for twenty minutes or half an hour. Milk so treated is to be preferred to sterilized milk, but it will only retain its freshness for a limited time. After heating it is necessary to rapidly cool it.

If the low temperature is maintained the milk may be retained for use several days. Even at ordinary temperatures it will remain good for about twenty-four hours, but it should not be preserved for use longer unless it is kept upon ice.

Milk to be Pasteurized for the use of children should be placed in a clean bottle, which is put inside any convenient metal vessel, into which cold water should be poured until it reaches the level of the milk in the bottle. The mouth of the bottle should be closed with a plug of clean white cotton wool. It will be found more convenient in practice to raise the bottle containing the milk about half an inch from the bottom of the outer vessel by any convenient means, as this facilitates the circulation of the hot water round the bottle.

The outer vessel should then be placed on a stove and slowly heated until the temperature of the water reaches 155 deg. F., at which it should be maintained for at least ten minutes. The vessel should then be taken from the fire. The cotton wool plug should be examined and tightly fixed in the mouth of each bottle, and it must on no account be removed until the milk is required for use. Immediately the vessel is removed from the fire it should be covered over closely with a piece of clean woollen cloth. It should remain covered for half an hour, at the expiration of which time the bottle should be taken out and put in a cool place.

Boiled Milk. Under the influence of the climate of India it is impossible to preserve milk for more than a few hours, if not in some cases even minutes. This has led to the practice, which has become almost universal throughout the country, of boiling the milk as soon as it is drawn from the cow or buffalo. There is evidence that milk which has been boiled does not possess quite the same nutritive value to the young as raw milk, but in a climate like that of India where it is difficult to preserve it, boiling must in most cases be resorted to. Prolonged boiling should, however, be

guarded against, for such a practice destroys the anti-scorbutic properties of the milk. The best plan is to heat the milk only just to the boiling point or to Pasteurize it by the plan given above.

Fresh Raw Cow's Milk. There is no doubt that more satisfactory results are obtained when perfectly fresh raw cow's milk is used as the basis of an infant's diet. Nevertheless, even fresh, pure cow's milk must be modified in order to serve as a substitute for breast milk—Mellin's Food will do this.

Objections to Ass's and Goat's Milk. The milk of the ass and the goat more nearly resembles mother's milk in composition than cow's milk does; but whilst the former is only to be obtained with difficulty, the latter frequently possesses a peculiar flavour and has also often an unpleasant odour; for these reasons they are very seldom used for infants. Another disadvantage attending the use of goat's milk is that these animals are always careless and sometimes dirty and erratic feeders, and in consequence, the milk yielded is variable in composition and usually unreliable in character. The goat, however, may be kept by even poor families in country districts at little expense, so that where due care is taken with the feeding, good fresh milk fit to serve as the basis of an infant's diet becomes available.

Cow's Milk Alone Unlike Breast Milk. Of the various kinds of milk used as food for infants, that yielded by the cow or the buffalo is by far the easiest to obtain, and undoubtedly yields the best basis of an artificial diet. Such milk differs essentially, however, from breast milk in many important respects. It contains a larger quantity of solid matter than mother's milk, principally in the form of caseinogen. A notable deficiency in the digestive power of infants is the inability to deal with any mass of solid or semi-solid matter. Some few children, no doubt, thrive upon a milk diet alone. Others, however, and by far the larger proportion, are unable to digest the curd of

unchanged cow's milk. Consequently, unless rejected by vomiting, the curd of the milk passes through them undigested; their wants are not supplied, and they starve for lack of nourishment, although swallowing every day a quantity of milk which would furnish ample nourishment for stronger and older children. In fact cow's milk food is the natural food of calves, but when unmodified is quite unsuitable for infants.

Cow's Milk must therefore be modified before it can so closely resemble breast milk in chemical composition and physiological properties as to be suitable for an infant's use. Since cow's milk contains more caseinogen and less water and milk-sugar than human milk, it becomes necessary to reduce the proportion of the former and to increase the other ingredients mentioned.

Diluted Cow's Milk alone not a good substitute for Breast Milk. (1) By dilution with water, the proportion of proteid matters may be reduced so as to represent those in human milk, but the indigestibility of the casein is not in the least overcome, and this undesirable property must be remedied in some other way, since the proteids are of the utmost importance in the nutrition of infants. (2) The amount of milk-sugar, already smaller in proportion than in breast milk, will be further reduced in the diluted cow's milk, and the mixture will in most cases be acid in reaction instead of alkaline. Heat and force-producing food-stuffs, which are represented by milk-sugar, are absolutely necessary for healthy life and growth. Infants cannot obtain milk-sugar from starchy foods, nor must cane-sugar be regarded as a satisfactory substitute for the sugar-of-milk, in which cow's milk is naturally deficient. When cane-sugar is employed, it gives rise to acidity and impedes digestion. (3) While the amount of ash in cow's milk somewhat exceeds that in breast milk, it has been found that the relative amount of potash salts is greater in the latter than the former; this deficiency of potassic salts must therefore be supplied.

Indigestibility of the curd of Cow's Milk.

Perhaps the most important difference in food value to the young infant between cow's milk and breast milk is due to the denseness and leather-like nature of the clot formed by the curd of the former. Ample dilution with water does not affect this property. Under the action of the digestive organs, the particles of casein run together in solid, compact lumps. This is not the case with milk from the breast, for this forms a light, loose, flocculent clot, which is readily disintegrated and digested. The difficulty which even the strongest children find in digesting cow's milk is shown by the masses of hard curd which a child fed exclusively upon a diet of cow's milk usually passes daily from the bowels. This difference between the two kinds of milk is answerable for much of the trouble and disappointment experienced when attempts are made to rear infants by hand upon cow's milk.

How Cow's Milk may be rendered like Human Milk and fit for the use of a Babe from Birth.

In order that cow's milk may be rendered easy of digestion and similar to breast milk :—

1. The curd must be made easily digestible and the proportion must be reduced.
2. The carbohydrates must be increased.
3. The fluid must be rendered alkaline.
4. The vitamins and antiscorbutic properties must be retained unimpaired.

Mellin's Food entirely fulfils the conditions which are necessary in a perfect food adaptable for the use of infants from birth. It is easily prepared, supplies in a suitable form the deficiencies of cow's milk, makes the casein readily digestible, and the milk alkaline; and it is entirely free from starch and consequently produces a perfect substitute for breast milk.

CHAPTER V.

THE FEEDING OF HAND-REARED INFANTS.

Where an Artificial Food is required. In considering the question of the artificial feeding of infants, we have three distinct classes of cases to deal with.

Firstly, those hand-reared from birth ;

Secondly, those who have to be weaned unduly early ;

Thirdly, those who are weaned under normal conditions at the age of about ten months.

For all such infants, cow's milk modified is the only proper substitute for mother's milk.

The two great advantages possessed by Mellin's Food are—that it is perfectly free from starch and that it makes cow's milk more digestible, rendering it like breast milk. When added to water or milk it dissolves and does not tend to thicken the liquid even on boiling, as starch-containing food substances will.

The Proportions must be varied to meet the needs of the Infant. These properties render Mellin's Food pre-eminently adapted for preparing an artificial diet for a child during the whole of that period of its life when its food should, in the course of nature, be wholly or

chiefly milk. All that is necessary in adapting it for the needs of children of different ages is to vary the amount of the Mellin's Food employed, according to the age of the infant.

The Importance of Variations in Diet. Children of the same age and parentage vary so much that it is impossible to prescribe exact quantities of food which will meet the bodily demands in all cases. All that can be attempted in the following is to give such general rules as have been found, by wide experience, to work well in average cases. What is well adapted to the requirements of one babe may not suit another, and a careful nurse when she sees the child fretting on food of one strength should gradually vary the proportions. At the same time it must be borne in mind that it is most undesirable that changes should constantly be made and experiments tried from mere caprice.

Care of the Milk. It is of the very greatest importance that the cow's milk which is to be employed in preparing an infant's diet should be of good origin, and when once in the house care should be taken of it until it is used. It must be kept in a cool place, covered over, so as to prevent flies, dust, etc., settling on it. Flies come from all kinds of undesirable places, and may carry from dust-bins, manure heaps, and decomposing materials many kinds of germs, which will grow and multiply rapidly in milk, and these may give rise to diarrhoea. In India, for the reasons given above, the milk should be boiled. As an alternative, the milk may be scalded by standing a cup of milk in a saucepan of boiling water, and leaving the same to stand without putting it upon the fire, or the milk may be kept sweet by placing it upon ice, or standing the containing vessel in cold water.

The Value of Mixed Milk. The milk from a herd of cows is generally more satisfactory than the milk from one cow. It is more constant in composition, and

is less likely to exhibit those variations which present themselves in the milk from one cow.

The Water to be used. The water should be boiled and allowed to cool before being used for mixing the baby's food.

Importance of Cleanliness. It cannot be too strongly urged that the most scrupulous care should be taken to secure the cleanliness of all jugs, pots, cups, spoons, measures or other utensils which may be employed in the preparation of an infant's food. Many cases of diarrhoea and sickness result from a want of care in this direction.

Objections to Feeding Bottles with Tubes. Perhaps no more common source of danger to bottle-fed infants exists than that which arises from the kind of bottle employed. The only permissible form is the slipper or boat shape, without tube; under no circumstance should a bottle with a long rubber tube be used.

In the recently issued Report of the Inter-Departmental Committee on Physical Deterioration it is stated that "a pure supply of milk may be rendered injurious by dirt in the house, the proximity of contaminating articles, the general ignorance, in fact, that prevails as to how milk should be stored and the conditions under which it is fit for use. One fertile source of contamination was said to be the use of the feeding bottle with a long india-rubber tube, which it was impossible to keep clean. Dr. Hutchinson said he would like to see this tube made illegal, as he believes it is in France, and is certainly in some of the States of America."

The Mellin's Feeding Bottle possesses the following advantages:—

When in use the contents are kept in contact with the teat, without an air space, until the bottle is emptied; and the swallowing of air by the child is avoided; also, being egg-shaped, the bottle is easy to cleanse.

The bottle is graduated to show both tablespoonfuls and the quantity of mixed food required by children at different ages and thus it reduces the risks of over-feeding so common in hand-rearing.



The plug for the admission of air is constructed so as to preclude the possibility of leakage, at the same time admitting air only so gradually as to satisfy the suction power of the weakest child.

Importance of Cleanliness of Feeding Bottles.

It is of paramount importance that the feeding bottle be kept scrupulously clean, and the cleanliness of the Mellin's Feeding Bottle is most easily secured. The best plan is, without doubt, to have two bottles, and after one has been used it should be at once washed thoroughly in running water, and should then be placed in a bowl of cold water, until next required. A good plan to follow in hot weather is to place the feeding bottles once a day in a saucepanful of cold water (in which a tablespoonful of carbonate of soda has been dissolved) and to allow the liquid to slowly come to the boil. Afterwards they should be washed in cold clean running water. It is of equal importance that the teat should be carefully cleansed; the inside of the teat requires washing as well as the outside.

CHAPTER VI.

ARTIFICIAL FEEDING FROM FIRST WEEK TO TENTH MONTH.

The proper food for hand-reared infants is fresh cow's milk simply modified with Mellin's Food. This produces a liquid which is thin like mother's milk. Do not add sugar or any substance to thicken the milk. Ayahs and even English nurses, as well as mothers, are usually desirous of making the infant's food as thick as possible, with the object of making it more satisfying. A thick food may at the time appear to have such an effect, but in reality it produces torpor of body and endangers the life of the child. Until the teeth have appeared no food which will thicken with milk or hot water should be given to an infant.

How to Prepare Mellin's Food for use. The quantity of Mellin's Food directed in the following pages for infants of different ages should be mixed with a little water, which has been previously boiled, then allowed to cool. The remainder of the water and milk should then be added and the whole heated to a temperature of about 100 degrees Fahrenheit. **The mixture must not be boiled.** For fixing the temperature, and general nursery purposes, Mellin's Nursery Thermometer will be found very useful.

The Quantity of Food required by an Infant is most conveniently spoken of in terms either of fluid ounces or of tablespoonfuls. Twenty fluid ounces make a pint (one fluid ounce equals about two tablespoonfuls) ; an ordinary sherry glass contains about two fluid ounces.

During the First Week, the food should be prepared as follows :—

| | | | |
|-----------------------------|-----|-----|--------------------------------|
| Mellin's Food | ... | ... | $\frac{1}{2}$ teaspoonful. |
| Cow's milk | ... | ... | $\frac{2}{3}$ tablespoonful. |
| Water which has been boiled | | | $2\frac{1}{4}$ tablespoonfuls. |

Two to three tablespoonfuls of this food should be given every two hours during the daytime, and the same quantity twice during the night.

During the Second Week of life, continuous night feeding should be dispensed with.

| | | | |
|-----------------------------|-----|-----|--------------------------------|
| Mellin's Food | ... | ... | $\frac{1}{2}$ teaspoonful. |
| Cow's milk | ... | ... | 1 tablespoonful. |
| Water which has been boiled | | | $2\frac{1}{2}$ tablespoonfuls. |

The amount to be given at a meal is three to four tablespoonfuls ; average number of meals, nine during the day, two at night ; interval between meals, about two hours. The child should, however, not be awakened to be fed.

Although precision in amount and punctuality in time should be carefully aimed at in the feeding of infants, yet they need not be rigidly adhered to—slight differences in the demand of the baby will occur from day to day, and these must be met by slight variations in the amount of food and in the mode of feeding.

As the child grows older, modifications should be slowly made in the mixing of the Mellin's Food for use, the milk and water being gradually increased, so that when the child is about **four weeks** old the following mixture would suit in average cases :—

| | | | |
|-----------------------------|-----|-----|--------------------------------|
| Mellin's Food | ... | ... | $\frac{3}{4}$ teaspoonful. |
| Cow's milk | ... | ... | $1\frac{1}{2}$ tablespoonfuls. |
| Water which has been boiled | | | $3\frac{1}{2}$ tablespoonfuls. |

This quantity will be sufficient for one meal.

As the child grows older, the Mellin's Food and milk should be still further gradually increased and the water decreased, until the child is **six weeks** old, when the following proportions may be used :—

| | | | | |
|-----------------------------|-----|-----|---|-----------------|
| Mellin's Food | ... | ... | 1 | teaspoonful. |
| Cow's milk | ... | ... | 2 | tablespoonfuls. |
| Water which has been boiled | | | 4 | tablespoonfuls. |

The amount to be given at a meal should now be about six tablespoonfuls, and the average number of meals, seven during day, one at night; the interval between meals, about two hours.

For a child aged **two months**, use :—

| | | | | |
|-----------------------------|-----|-----|----------------|-------------------|
| Mellin's Food | ... | ... | 1 | full teaspoonful. |
| Cow's milk | ... | ... | $2\frac{1}{2}$ | tablespoonfuls. |
| Water which has been boiled | | | $4\frac{3}{4}$ | tablespoonfuls. |

This is the amount necessary in average cases for one meal, and it should be given every two and a-half hours.

Again gradually increase the Mellin's Food and milk until at **three months** the following mixture is used :—

| | | | | |
|-----------------------------|-----|-----|---|-----------------|
| Mellin's Food | ... | ... | 2 | teaspoonfuls. |
| Cow's milk | ... | ... | 4 | tablespoonfuls. |
| Water which has been boiled | | | 4 | tablespoonfuls. |

Give from six to eight tablespoonfuls of this mixture every two and a-half hours.

Increase the Mellin's Food and milk gradually as before, until the child is **four months old**, when the following proportions will be adapted for average cases :—

| | | | | |
|-----------------------------|-----|-----|----------------|-----------------|
| Mellin's Food | ... | ... | $2\frac{1}{2}$ | teaspoonfuls. |
| Cow's milk | ... | ... | 5 | tablespoonfuls. |
| Water which has been boiled | | | 4 | tablespoonfuls. |

Amount to be given at a meal, eight to nine tablespoonfuls; average number of meals, six during day; interval between meals, about three hours.

For a child aged **five months**, use :—

| | | | | |
|-----------------------------|-----|-----|----------------|-----------------|
| Mellin's Food | ... | ... | $3\frac{1}{3}$ | teaspoonfuls. |
| Cow's Milk | ... | ... | $5\frac{3}{4}$ | tablespoonfuls. |
| Water which has been boiled | | | $4\frac{1}{2}$ | tablespoonfuls. |

Nine to ten tablespoonfuls of the Mellin's Food so prepared to be given about every two and a-half hours, from 6 a.m. to 10 p.m.

At the age of **six months** the child's food should be prepared as follows :—

| | | | |
|-----------------------------|-----|-----|--------------------------------|
| Mellin's Food | ... | ... | $3\frac{1}{3}$ teaspoonfuls. |
| Cow's Milk | ... | ... | $7\frac{1}{2}$ tablespoonfuls. |
| Water which has been boiled | | | $2\frac{1}{2}$ tablespoonfuls. |

Amount to be given at a meal, from ten to twelve tablespoonfuls of the prepared Mellin's Food about every three hours, from 6 a.m. to 10 p.m.

When to Mix the Food for each Meal. In all cases where the climatic conditions are such that milk will not retain its freshness for more than a short time it is better to mix the food freshly for each meal. The proportions suggested above may be taken as suitable in all average cases, but just as infants of the same age differ in vigour and growth so they vary also in their food requirements, and this should be constantly kept in mind and slight modification made to meet particular cases.

Indications for Increased Quantity of Mellin's Food. Promiscuous advice is constantly poured out to young mothers, and they are unfortunately only too often ready to follow any new notion which an irresponsible chatterer may venture, so that the babe has not a fair chance. Every mother should remember, therefore, that where the infant thrives on the above diet she would do well not to interfere with the food. If, however, the infant appears dissatisfied and cries almost immediately after feeding, and exhibits constant restlessness, these symptoms may be taken as indications either of the insufficiency of the food, or that it is not rich enough in character. Should these conditions arise, do not change the food, but merely increase the quantity of Mellin's Food used in preparing the mixture until the baby is satisfied by its bottle, and becomes contented and happy.

Importance of Progressive Diet. As the child grows, and the demands made by the various organs of the body for nutritive material become greater, the quantities of Mellin's Food and milk used must be gradually increased so as to meet the requirements of the rapidly developing body. It must, however, be continually kept in mind that a proportion of Mellin's Food sufficient to ensure the thorough digestion of the milk must at all times be used. With all infants it is best to increase the Food very gradually. Abrupt variations are very likely to derange the organs of digestion, and such should be guarded against by care in preparing the food.

Changes in Diet to be Gradual. The quantity of Mellin's Food to be mixed with milk in order to produce a diet well adapted for children at different ages is a matter of considerable importance. It is difficult—in fact, practically impossible—to give rules which would be applicable in all cases for the preparation of the meal with Mellin's Food, or to prescribe the exact quantity to be given for a meal, since some infants are healthy, strong, and constitutionally perfect, while others are ailing, weak, and without stamina. It is therefore incumbent on mothers and nurses to use discretion in preparing the Mellin's Food. By a little patient experiment, the suitable proportions of the dry powder, milk, and water, the right quantity for a meal, and the proper temperature for each individual case may soon be determined; but, as before stated, it is necessary that an amount of Mellin's Food sufficient to ensure the digestion of the milk should be used.

Remove the Feeding Bottle after the Meal. The first sign of indifference, it may be remembered, is a sure indication that the infant has had enough, and the bottle should be at once removed from its sight, and not given to it again until the next meal.

The Frequency with which Infants are to be fed is a question equal in importance to that of the

quality of the food to be given. Care must always be taken that the meals are not too frequent, or too large in quantity. *Young mothers are often inclined to overfeed their infants.*

The Size of an Infant's Stomach. The average capacity of an infant's stomach is :

At Birth ... $1\frac{1}{4}$ fluid ounces $2\frac{1}{2}$ tablespoonfuls.

Second Week $1\frac{1}{2}$ " " 3 " "

First Month 2 " " 4 " "

Fourth " 5 " " 10 " "

Sixth " $6\frac{1}{2}$ " " 13 " "

It must be remembered that if an infant's stomach be constantly overloaded, even with a digestible diet, the effect is almost as injurious as if the child were fed upon less digestible food in more reasonable quantities.

Suggested Times for Feeding Baby.

| First Week. | Second to Fourth Week. | Second Month. | Third and Fourth Month. | Fifth Month. | Sixth to Ninth Month. | Tenth Month. |
|-------------|------------------------|---------------|-------------------------|--------------|-----------------------|--------------|
| A. M. | A. M. | A. M. | A. M. | A. M. | A. M. | A. M. |
| 6.0 | 6.0 | 6.30 | 6.30 | 7.0 | 7.0 | 7.0 |
| 8.0 | 8.0 | 8.30 | 9.0 | 9.30 | 10.0 | 10.0 |
| 10.0 | 10.0 | 10.30 | 11.30 | 12.0 | P. M. | P. M. |
| 12.0 | 12.0 | P. M. | P. M. | P. M. | 1.0 | 1.0 |
| P. M. | P. M. | 12.30 | 2.0 | 2.30 | 4.0 | 4.0 |
| 2.0 | 2.0 | 2.30 | 4.30 | 5.0 | 7.0 | 7.30 |
| 4.0 | 4.0 | 4.30 | 7.0 | 7.30 | 10.0 | |
| 6.0 | 6.0 | 7.0 | 9.30 | 10.0 | | |
| 8.0 | 8.30 | 10.0 | 11.0 | | | |
| 10.0 | 10.0 | A. M. | | | | |
| A. M. | A. M. | 2.30 | | | | |
| 2.0 | 2.30 | | | | | |

It is a great mistake to accustom a child to take food whenever it cries. When a baby is hungry it must be fed, but all cries are not from hunger, and a mother should learn to distinguish them, and should remember that a little crying does good, while frequent feeding may do harm. Some cries are from thirst, and in such cases a teaspoonful of cold boiled water should be given.

Variation in Mixing Mellin's Food. In the rearing of infants by hand from birth slight difficulties frequently occur from time to time, when the food may appear to disagree. Perhaps at one time the child may develop a looseness of the bowels, while at another the motions may become unduly hard and the bowels sluggish in action.

Feeding with Citrated Milk. The curd of cow's milk may be rendered more digestible for infants by the addition of sodium citrate to the milk. The milk may then be used undiluted and therefore the volume of each feed decreased which is a special advantage in cases of diarrhoea. Prepared as directed below, it may be used for infants from the age of a fortnight onwards. At the age of six months the proportion of sodium citrate is gradually reduced until whole milk is being used.

Method of Preparation of Citrated Milk. Dissolve 6 grains of sodium citrate in a tablespoonful of boiling water. Add a teaspoonful of this to each feed. Pasteurise the mixture and when cooled to the required temperature give to the infant.

Importance of Lime-Water in Case of Looseness of the Bowels. In cases where there is any tendency to diarrhoea lime-water (*see page 133*) should be employed in place of a portion of the water advised in the general directions upon the preceding pages. At first for very young infants a teaspoonful of lime-water may be substituted for one of ordinary water, and if the symptoms do not pass off then the quantity may be increased until half the water advised is replaced by lime water. The modification to be made in the diet in severe cases of diarrhoea will be dealt with in Chap. XIII.

For persons who are travelling or those who find any difficult in obtaining lime-water—which is an invaluable agent to have at hand when one has a baby to feed artificially—the saccharinated solution of lime* mentioned on page 140 is to be strongly recommended. It is much less bulky to carry, and when properly prepared

* May be obtained of any chemist.

will retain its activity for a long period. About 5 to 15, or even 20 drops may be mixed with each meal as the child varies in age from one month to ten months.

The use of Barley-Water in Constipation.

When the motions become irregular and the bowels sluggish, then the best plan is to increase the quantity of Mellin's Food, or for a time decrease the amount of milk used in preparing the diet. In bad cases barley-water (*see page 140*) may be used instead of ordinary water for mixing the food. In many cases relief may be obtained and regularity and healthy action re-established by the use of a teaspoonful of ripe orange juice once or twice a day. This may be given to the child from a spoon, and if any difficulty is experienced in getting the child to take it this may be overcome by mixing a little of the Mellin's Food powder with the orange juice.

The Cause of Possetting. A baby often sucks its food very vigorously, and thus rapidly takes in more than sufficient to fill its little stomach; consequently it frequent returns the excess by what is known as "possetting"—that is, from time to time a small quantity of food slowly trickles from the corners of the mouth. When this condition arises it is necessary that the baby should be kept quiet after feeding. Indeed, most children are systematically overfed, for it is difficult for an inexperienced mother to realize how small is a child's stomach.

When the Diet Disagrees. Where a child is fed upon Mellin's Food, prepared as directed, and it in any case seems to disagree, the mother or nurse should endeavour at once to satisfy herself whether the fault be with the milk, with the method of preparation of the food or the way in which it is given. And it is well to bear in mind that the whole cause of trouble may be in the kind or condition of the feeding bottle employed. If an infant's digestive organs are for a time so out of order that milk cannot be retained, then Mellin's Food dissolved in cold water only should be used for a few

days ; it is usually best to give it in small quantities frequently repeated. In some cases Mellin's Food dissolved in barley water has given excellent results. As soon as the stomach gains tone a small quantity of milk should be cautiously added.

Feeding in Cases of Vomiting. In cases of acute vomiting, attended with more or less effort and retching, some errors in diet are indicated. The causes usually fall under the heads—

1. Too large a quantity of food at a meal.
- 2 Too frequent feeding ;
3. The use of improper artificial foods, containing starchy substances ;
4. The use of cow's or buffalo's milk rich in curd, or rich in cream.

With breast-fed children vomiting is due in most cases to the breast being given too frequently, or to some derangement in the health of the mother. The period between meals should be lengthened, and the mother's health should be attended to. Where infants are fed artificially, farinaceous foods should be discarded, and the milk employed should be subjected to examination. Should the vomiting become persistent, medical aid must be obtained. In any case all starchy foods must be abandoned, and Mellin's Food, prepared as directed, should be substituted and employed until medical advice is obtained.

It ~~very~~ rarely happens that the digestive powers of an infant remain quite normal during the whole of the first year, and consequently slight modifications are required in mixing the food from time to time to meet the peculiarities of the child.

Infantile Diarrhœa. Diarrhœa is one of the most serious ailments that a baby can have, and unless it is of a very mild character and the child only slightly out of health, the medical attendant should be sent for.

Suggestions for the modification of the diet in cases of diarrhœa and constipation are given in the chapter upon Minor Ailments (*page 73*).

Mellin's Lacto. Where difficulties exist in obtaining regular supplies of good fresh milk, and in cases where the milk does not agree, Mellin's Lacto should be used. This food is prepared from rich fresh cow's milk and Mellin's Food, evaporated and reduced to a dry powder.

1. It is never sour, and is constant in chemical composition and physical properties.
2. The meal for the baby may be prepared with the greatest ease, for Lacto requires no cooking, but has merely to be mixed with warm water.
3. Another great advantage which is highly appreciated by mothers in India is that it secures constancy of the character of the diet, when moving from place to place.

For an Infant about One Month Old.

Lacto ... Two heaping teaspoonfuls
Hot water... Five tablespoonfuls.

For an Infant about Three Months Old.

Lacto .. One tablespoonful.
Hot water.. Eight tablespoonfuls.

The amount given should be reduced for an infant under 1 month and increased gradually for a child over 3 months.

For an Infant about Six Months Old.

Lacto .. Two tablespoonfuls.
Hot water.. Half a pint (20 tablespoonfuls).

For Invalids and Nursing Mothers. A somewhat stronger mixture should be made in warm water.

Method of Preparation of Mellin's Lacto. Place the powder to be used in a large cup. Add a little hot, but not boiling water, and stir the whole into a thin smooth paste; then pour on the rest of the hot water directed, with constant stirring. The mixture is now ready for use. No sugar or other material is required.

For Adults. Milk may be added to the mixture of Mellin's Lacto, or it may be flavoured with tea, coffee, or cocoa, to meet the taste and idiosyncrasies of the user.

CHAPTER VII.

INFANT FEEDING DURING AND AFTER WEANING.

FROM THE AGE OF TEN MONTHS TO TWO YEARS.

The Weaning of Breast-reared Infants. Where an infant is breast-reared, a period sooner or later arrives when it must be weaned. This time is determined by a variety of causes which it would be quite beyond the scope of this little work to discuss. Often before the usual time for weaning, the mother is suffering from the demands upon her system, and the breast-milk is poor and deficient; then the child should be alternately nursed at the breast and fed with prepared Mellin's Food.

Warning to the Mother. A most important point to notice in reference to the mother is that she will most probably suffer from persistent headaches when the child's suckling is too much for her.

The Proper Time for Weaning. No age can be definitely fixed which would apply in all cases, but if an infant is steadily gaining in weight, and if other conditions are also favourable, it should be nursed until about ten months old and should then be weaned. If possible the weaning should not be carried out in hot weather, or while the child is distressed by cutting its teeth, or during an illness, even if only slight. When

it is decided to wean a breast-fed infant, it should be fed at first with milk modified with Mellin's Food in the proportions of two heaping tablespoonfuls of Mellin's Food dissolved in twelve tablespoonfuls of water and then mixed with twenty tablespoonfuls of good fresh milk. The quantity of milk may be gradually increased to thirty tablespoonfuls and the water decreased to two tablespoonfuls. It is best to begin by substituting the prepared Mellin's Food for one nursing, and then for two, and then to alternate with breast feeding, and so on until weaning is completed ; this takes from four to six weeks.

When the Feeding Bottle is Refused. Occasionally a breast-fed infant will not readily take food from a bottle ; in such cases the breast must be refused it entirely, when hunger will usually compel it to take the bottle. The difficulty may usually be overcome by dipping the teat in dry Mellin's Food or honey.

The Introduction of Solid Food. The infant being weaned, or a year old if it has been bottle-fed, it should have one meal a day of semi-solid food, and very gradually, starch-containing foods may be introduced into the daily dietary. Perhaps the two best forms in which to begin the introduction of starchy materials in a condition easy of digestion are Mellin's Food Biscuits and Oat Jelly. The diet during all of the second year, however, must still consist largely of milk modified with Mellin's Food—one-and-a-half or two pints a day—which should now be given from a cup or spoon instead of a bottle. It is best to begin the use of solid food at the mid-day meal, and for this purpose a lightly boiled egg and a little bread and butter, with a tablespoonful of pudding, will be found very useful. All the more readily digestible forms of puddings, including those named in a later chapter, may be used.

Importance of Gradual Changes in Diet. If this is well borne, a further advance can soon be made

by adding a thin slice of bread and butter or a rusk or a Mellin's Food Biscuit to the second meal; these should be broken into small pieces and the child taught to chew them thoroughly. When an infant has become quite accustomed to these changes in the diet, the first meal should be increased by the addition of a slice of bread or a rusk broken up and soaked in the prepared Mellin's Food. Afterwards the fourth meal may be made like the first. If the child is thriving a fifth meal need not be given.

The Weaning of Bottle-fed Infants. Weaning from the bottle should always be commenced by the thirteenth month, and by the age of fifteen months the child should take liquid food freely from a cup, except the night feed at about 10 p.m., which for convenience may still be given by means of a bottle.

The Importance of Fruits in Infancy. The more easily digested portions of ripe fruits, such as the pulp of stewed prunes or of baked apples, may be given in moderation with the midday meal. At this period of life the fresh juice of a sweet orange is an especially serviceable addition to a child's dietary. When the infant is a year old, two or three teaspoonfuls may be given an hour before the midday meal and increased gradually to three or four tablespoonfuls.

Careful Attention Necessary. Between the ages of one and two years, the developing infant is gradually becoming prepared to take and make use of ordinary articles of diet, and, as each child is a law unto itself, very careful attention must now be given to the effects of different foods upon the child. Any error in the feeding, with respect to either quantity or quality, will be quickly followed by a more or less serious derangement of digestion with consequent impairment of the child's vitality. An indication that the food disagrees with the child will be afforded by a change in the character of the stools. Should they become greenish

in colour and accompanied by offensive diarrhoea, the food and method of feeding should be at once changed.

When Meats should be given. Between eighteen and twenty-four months of age, the child will have cut its first set of double teeth and it may have small quantities of the white meat of chicken or roast mutton or mutton chop. This should be finely minced or scraped and mixed with bread crumbs or mashed potatoes and moistened with some natural meat juice gravy which has exuded from the cut meat. For weakly young children, underdone, finely shredded butcher's meat is to be recommended.

The Diet in Infancy should be Varied but Plain. Although there should be some variation in the food, care must be taken that this is not too great, for invariably infants thrive best upon a simple diet.

Foods to be Avoided. The following are some of the common articles of diet which are to be avoided in feeding infants and young children. Hard-boiled eggs, meats put up in tins, duck, goose, heart, liver and kidney, and all highly seasoned dishes or rich gravies and soups. Dried fish, fresh-water fish, crustaceans (such as shrimps, crabs, lobsters), and all soft-bodied water animals, are also to be avoided.

Heavy, close or new bread, pastry, sweet and rich cakes, currants and raisins in puddings, nuts, beans, pickles, radishes, cucumber, dahl, celery, parched grains or any vegetables which are indigestible for adults must not be given.

Drinks to be Avoided. Young children should on no account be given tea or coffee, and no alcoholic stimulants should be given, except under explicit medical orders. In cases of indigestion, gin and other spirits should not be given. A little hot peppermint or ginger water may, however, be used.

SUGGESTIONS FOR DAILY DIETARY AFTER WEANING.

TWELVE TO FIFTEEN MONTHS OF AGE.

First meal about 6 a.m.

About one-half pint of prepared Mellin's Food.

Second meal, about 8.30 to 9 a.m.

About one-half pint of prepared Mellin's Food and a thin slice of bread and butter.

Third meal, 1 to 1.30 p.m.

About one-half pint of milk and egg with Mellin's Food (or a lightly boiled egg with a little bread and butter), and a good tablespoonful of sago or tapioca pudding.

Fourth meal, 4.30 to 5 p.m.

About one-half pint of prepared Mellin's Food with a slice of stale bread broken and soaked in it.

Fifth meal, about 7 p.m.

About one-half pint of prepared Mellin's Food.

FIFTEEN TO EIGHTEEN MONTHS OF AGE.

First meal, about 6 a.m.

Three-fourths pint of prepared Mellin's Food in which a slice of stale bread or a rusk has been soaked.

Second meal, 9 a.m.

One-half pint of milk and egg with Mellin's Food and a slice of bread and butter or a rusk.

Third meal, about 1.30 p.m.

A cupful of meat broth with a little rice; a thin slice of bread and butter and a tablespoonful of rice or custard pudding.

Fourth meal, about 4.30 to 5 p.m.

Bread and milk with Mellin's Food.

Fifth meal, about 7 p.m., if needed.

One-half pint of prepared Mellin's Food.

EIGHTEEN TO TWENTY MONTHS OF AGE.

First meal, about 6.30 a.m.

One-half pint of Mellin's Food, and a lightly boiled egg with bread and butter.

Second meal, about 9.30 a.m.

One-half pint of Mellin's Food and Mellin's Food Biscuits.

Third meal, about 1.30 p.m.

One-half pint of beef, mutton or chicken broth or a lightly boiled egg with a thin slice of bread and butter; and milk and Mellin's Food, with a rusk or Mellin's Food Biscuits, saucer of rice or custard pudding.

Fourth meal, about 6.30 p.m.

One-half pint of Mellin's Food and a thin slice of bread and butter or a rusk.

TWENTY TO TWENTY-FOUR MONTHS OF AGE.

First meal, about 6.30 a.m.

One-half pint of Mellin's Food and a lightly boiled egg with bread and butter.

Second meal, about 9.30 a.m.

One-half pint of Mellin's Food and Mellin's Food Biscuits.

Third meal, about 1.30 p.m.

A good tablespoonful of scraped chicken, beef or mutton, with one well-mashed baked potato moistened with two or three tablespoonfuls of dish gravy. A little mashed peas or beans may also be given.

Fourth meal, about 6.30 p.m.

One-half pint of Mellin's Food and a thin slice of bread and butter, or a saucer of rice or tapioca pudding.

The milk used in preparing Mellin's Food should be raw milk of good quality.

A list of simple Foods and Drinks adapted for young children will be found upon pages 121 to 138.

CHAPTER VIII.

THE CLOTHING OF INFANTS.

The Clothing of an Infant very materially influences its condition of health, and may very largely determine its ultimate constitution; for it must be remembered that constitution, or the degree of health enjoyed by any individual, is not only partly inherited but largely acquired; consequently no subject of nursery hygiene requires greater care in India and the tropics generally than that of clothing. Babies are far more susceptible to changes of temperature than adults. Their liability to bodily derangements, in consequence of undue exposure, is far greater than in adults.

The Climatic Conditions vary so very much over the enormous tracts of country comprised under the term India that it is impossible to formulate rules which would be applicable in all parts of the country, but a few simple facts for general guidance may be stated.

The three properties to be considered in selecting the materials for a baby's clothing are:—1st, **softness**; 2nd, **lightness**; 3rd, **protection**.

A Baby's Skin is very soft and tender and readily chafed, which makes it necessary that care should be taken to choose those materials for its clothes which will not cause irritation. The clothing should be as light in weight as is compatible with due protection, and should be evenly distributed over the child's body. The sleeves of the dress should be made long and the

neck high. The arms, legs, and neck should not be exposed under the mistaken notion that such treatment will make the child hardy. For small children these precautions are very necessary in India, on account of the carelessness of ayahs.

The Area of India is so great that it necessarily embraces a variety of climates, and the following remarks must only be taken as embodying broad principles, to be varied in detail with local experience. It is first necessary to warn mothers on the one hand against the evils which may arise from a want of protection from the direct action of the sun, and on the other from the influence of night chills and dry winds. The tendency of young mothers is to load the chest of the baby with too great an amount of clothing, frequently neglecting the necessary protection of other parts.

All Clothing should be made Loose, and if a child be prematurely born, or constitutionally delicate, special care should be devoted to its underclothing.

Influence of Change of Temperature. Residence in India, and in tropical countries generally, tends to induce slight delicacies of constitution which render one more susceptible to diseases of all kinds, and this influence is most marked in early infancy. Nurses sometimes object to wrapping up children in India; but the dangers which arise from undue exposure are often greater than in England. The temperature falls so suddenly that the differences of temperature in the tropics before and after sunset are much more marked and rapid than in temperate climates. A chill, which in England would merely lead to a slight cold without serious consequences, will, on the other hand, in India frequently lead to the development of more dangerous symptoms. For this reason exposure to draughts and night air and **chills should be very carefully avoided**. It is well that young Anglo-Indian mothers should remember that a fall of a few degrees of

temperature in the tropics will make a much greater impression upon the highly susceptible body of an infant than a fall of many degrees in a temperate zone. There is probably no climate that requires so much attention to change of dress as that of India, and therefore a careful mother will vary her child's costume during the day with the marked changes of temperature.

The Baby's First Clothes are usually made very long, which practice is both unnecessary and uncomfortable for the child. For the first dress a length of twenty-six to twenty-eight inches is enough, measured from the neck to the hem of the skirt.

The best means of obtaining warmth in conjunction with softness without undue weight, is by employing lightly made woollen materials, such as fine, but not too closely woven, flannel, flannel-gauze, cashmere, and merino. Such fabrics cost little more than cotton or linen in the first place, and are much more durable. By doing away with the foolish and costly process of short-coating, a child may be provided at once with an outfit for its whole infancy.

The Washing of Woollen Materials is a somewhat troublesome question where one has to rely upon native servants. A mother should see that the *dhobee* adopts the following plan:—The water in which the flannels are put should be warm, *not hot*, and the lather should be prepared beforehand with some good soap—extract—or pieces of ordinary soap may be cut up small, boiled down with a little water in an old saucepan, and then added to the water in which the clothes are to be washed. Another plan is to add about a tablespoonful of fluid ammonia to each two gallons of water used for washing, by which means it is softened. The clothes should then be lightly and quickly rubbed, either with the hands or upon a washing board, until they are quite clean, rinsed in clear warm water, mangled, and allowed to dry quickly.

The number and shape of the various articles of clothing and the materials of which they are made will, of course, vary with the circumstances of the parents.

The Usual Outfit for a Newborn Baby:

| | |
|---|------------------------------------|
| 6 shirts ; | 3 flannel binders ; |
| 3 day flannels ; | 3 dozen diapers ; |
| 3 night flannels ; | 2 head flannels — 1 night, 1 day ; |
| 6 day dresses ; | 4 pairs wool boots ; |
| 6 night dresses ; | 1 soft fleecy wool shawl ; |
| 1 flannel and 1 mackintosh apron for washing the baby on ; 2 or 3 dozen goodries. | |

Later, some bibs and flannel pilches will be required.

The usual cotton binders, which are often drawn round the child's body as tightly as possible and then stitched, not only make the child uncomfortable, but seriously impede its breathing.

The Shirt should be twenty-four inches round, and nine and a quarter deep. It may be made of fine nainsook or embroidery cambric, trimmed with narrow Valenciennes lace, of which one yard and a half will make six shirts ; but a better material to use is fine merino vesting, or quite the best plan is to make them of **fine knitted Shetland Wool**. The latter plan, of course, necessitates a great deal of labour ; but during the later stages of pregnancy absolute rest is necessary, and a young mother will find pleasure and relief in the work. Shirts are sometimes made with a small V gore let in under the arm ; but this is quite unnecessary, and the seams prove a source of irritation to the delicate skin of the child.

The Binder should be of flannel, five inches broad, and long enough to pass twice round the child's body. It should be prepared without hems or turnings, and left with raw edges, and should be fastened with flaps taped at each side to tie across, and the use of pins avoided. When so made and used the binder is elastic, and serves as an efficient support for the abdomen without pressure upon any of the internal organs.

The Skirt and Bodice should be made of Saxony flannel, and it is preferable that it should be made in two parts, so that, should the lower portion become soiled, it may easily be removed without disturbing the rest of the clothing. The bodice should be about the same size as the skirt, save that it must be made to fasten down the front, and the skirt should be about eighteen inches deep when finished. The two portions should be fastened together by means of flat buttons on the bodice, and holes to correspond on the skirt. Some of these garments, for night wear, might be made in one piece.

The Dress should be made in one piece from neck to feet, and cannot be too simple, as comfort is essential. Twenty-eight inches will be found long enough from neck to hem, and fifty-two inches round the bottom. The sleeve should be cut in one piece, and the extreme length is ten-and-a-half inches, nearly three inches of which folds up at the wrists to form a cuff. It should be cut sloping up, so as to be introduced into the neck, by which means the armhole is made larger than usual, and so much easier for the introduction of the arm. The back of the dress should be open from neck to bottom, and the top gathered into a neck-band through which a draw-string should be passed to run round the neck. The front should be gathered about six inches from the neck across the body, and attached to about six inches of the centre of the band. The band itself should be made so as to fit *quite loosely* when brought round the waist. The material employed may either be fine nainsook, cambric, or flannel gauze.

The Night Dress may be of long-cloth, trimmed with narrow embroidery or lace, and cut the same shape as that for the day dresses. As soon as the band and night flannel are given up, the child should wear a fine knitted wool vest and a flannel nightdress. In the hotter parts of India, and during the summer in the plains, the best plan is to employ one made of fine

gauze flannel, and during the winter and in the hill districts thicker flannel must be used.

Boots are hardly needed where the clothing is purposely arranged to cover the feet; when, however, some kind of covering for the feet becomes necessary, those are best which are knitted of the finest wool.

Napkins should be made of some soft absorbent material, such as thin Turkish towelling. When soiled they should be removed as soon as possible, washed, and dried in the sun. Only one diaper should be used at a time; such a bulky lot of material as two or three diapers not only makes a child uncomfortable by pushing its thighs apart, but tends to alter the shape of its legs.

The Goodrie is a small quilted square, from fifteen to eighteen inches wide and twenty-four inches long, upon which it is the usual practice to carry infants in India. Half-a-dozen at least should be constantly in use, and they should be kept clean and dry, since they are constantly liable to soiling by the infant; they should be washed and dried daily by the ayah; weekly they should be sent to the dhobee to be thoroughly cleansed.

For Outdoor Purposes a white Chudda shawl, during the first months of life, serves well as an outer garment. Later a soft thin woollen garment with very loose sleeves should be worn. So long as a child is unable to wear a sun topee, it ought only to be taken out in the early morning or during the late afternoon, after five o'clock in most parts of India. The child should be carried about as little as possible to prevent friction of the arm and undue heating.

CHAPTER IX.

THE NURSERY AND AYAH.

We have considered in the preceding chapters the questions of feeding and clothing as being the two most important factors determining the health and well-being of infants. Before passing to the consideration of the minor ailments of childhood we may next refer to the possible influence of the nursery and nursing upon the health of the child.

The Nursery. In the choice of a room for a nursery the following conditions should be complied with. The room selected should be large, well ventilated, free from draughts, and not in the neighbourhood of a cesspool, closet, or any other source of unhealthy exhalations. An impure atmosphere tends to lower the tone of health, and not only induces a sickly constitution in the child, but, by reducing the vitality, causes a susceptibility to diseases.

Healthy Site for Dwelling. The rooms of Indian bungalows are usually large and airy, but the bungalows are not always themselves healthily situated. The following simple rules may be borne in mind by young parents when selecting the site for a bungalow :—

1. The site should be dry. Avoid, as you would death, a damp locality. In a town ascertain whether or not the proposed site is on “made soil.”

2. The site should be elevated on rising ground, hillside or slope, never in a hollow. The hillside is usually warmer and drier.
3. The site should not be close to a swamp, slow river, milldam, or land which is overflowed a portion of the year, nor in such a place that the prevailing winds will bring to the house damp air and miasmatic vapours.
4. In a village or town build on as large a compound as possible, thus securing air and sunlight. Build back from the highway, thus avoiding the dust of the dry season and the curious gaze of every passer. Secure a site in which trees and plants will furnish shade and add to the general healthiness of the site.
5. In the country build the bungalow back from the highway, giving an abundance of room for trees and shrubbery about the house. Do not select a place where your family will be isolated from all social intercourse, so necessary to the health of mind and body.
6. For the aspect let the house be so placed that it will receive fresh air. Avoid, even if offered rent free, a damp, dark house with no chance of the free air to sweep through it. The living-rooms should always be warmed by the morning sun. If the cold winds from the north and west are severe in winter in hill districts, they may be broken by a cluster of evergreen trees planted on those sides.
7. The bungalow should always be built so that the ground floor is raised a few steps above the level of the earth. And if one part is raised to a greater extent than the rest in consequence of the slope of the soil, a room on the higher side should be selected for the nursery.

The Nursery and all the surroundings should be bright, clean, and cheerful; no unnecessary furniture, rugs, curtains, or hangings should be allowed. Although flowers may be permitted in the daytime to beautify the room, they should be removed at night, for the stagnant water and the aroma given off by the plants do not add to the purity of the atmosphere. And the one essential in the matter of air is that it should be pure and, as nearly as possible, of a uniform temperature. In the matter of wall covering, wood varnished or painted, or dis-temppered or painted walls, are best. These may be adorned with pretty prints from the home illustrated papers.

A Cot should be provided, with a fairly firm horse-hair or grass mattress, protected by a macintosh sheet, and on no account should the baby be permitted to sleep with the nurse.

The Cot should be placed near one side of the room in such a position as to escape direct draught. Near the inner wall is preferable, but do not place the bed so that it is exposed to the strong rays of the morning sun, for although sunlight is good, and possesses many hygienic properties, yet the strong glare disturbs the rest and acts injuriously upon the eyesight. It is best to shelter the side of the bed most exposed to air currents by means of a screen. Good ventilation should be secured, but means must be taken to prevent draughts. At night, during the rainy season, the outer shutters should be closed, and in districts of India where the punkah has to be employed at night care must be taken that it is not so violently pulled as to produce draughts of cold night air.

The Night Clothes of the Baby. Children, especially when young, are very apt to be restless during sleep, and to throw off the clothes. A very good plan, therefore, is to make the bed gown long and close it at the bottom, by means of a running tape. By such a

garment, even where the bed-clothes are thrown off, the body is protected from draughts. And this is of the utmost importance since it is to the chills to which babies are exposed during the sleeping period that much of the delicacy and sickness of Anglo-Indian children may be traced. These precautions with respect to the night clothes should receive the greatest attention during the period of the monsoons.

Importance of Supervision. For the best conditions to be secured it is absolutely necessary that a mother should herself superintend the nursery, and see that the directions which she lays down for the management of her child and its surroundings are followed in every detail. With even the best native servants a mother has to combat against ignorance, prejudice, and carelessness, and she can only hope to obtain the best conditions for her babe by personal supervision of details. The young Anglo-Indian mother must be prepared to sacrifice a great deal of her time to the care of the nursery and her children if she would have them brought up under the most healthy and favourable conditions. Of course, where a mother has the advantages of a good English nurse a great deal of the responsibility and anxiety is taken from her; but where she has to depend entirely upon native servants, she will, as a rule, find that it is necessary to exercise constant vigilance, and to superintend the treatment of her babe and the general work of the nursery, in order to secure that the rules which she lays down shall be readily adhered to.

Sleep. A newly born infant sleeps the greater portion of the day, and usually, when healthy, wakes up only for feeding. The amount of sleep required decreases as the age and activity of the child increases, until at the age of one year a child will sleep some fifteen or sixteen hours out of the twenty-four. Some young children suffer from excessive activity of brain, and are

restless, and sleep but little at night. Ayahs are much disposed to administer soothing drugs containing opium or morphia; a mother should therefore guard against this, and should not allow the ayah to administer drugs or medicines of any kind whatever to her child. Nor should she employ any of the so-called soothing syrups herself, but where such conditions arise in a child as are referred to above she should call in medical aid.

The symptoms of drugging, for which a mother should carefully watch if she has reason to suspect that the child's sleep is not quite natural, are as follows :—

Heavy Sleep. The child if roused dozes off again immediately. Remember that a child under four months will usually not sleep for longer periods than four hours to four hours and a-half at a stretch.

The breathing during sleep is irregular, and at times scarcely perceptible.

The child on waking is not anxious for food.

The pupils of the eyes become contracted.

The face usually becomes pale during sleep.

Where drugs are employed in small quantities in a short time the digestion is interfered with, the appetite is reduced, constipation is produced, the excreta becomes hard and clay-coloured, and these symptoms are usually followed by pallor, feebleness, and general wasting.

Sleeplessness is frequently due to want of fresh air and exercise, or to error in diet, unless, of course, it may be traced to teething troubles, or to the existence of internal worms. A child should be taken into the open air as much as possible. At three months a child should be taken out twice a day at least; in the morning say at 6.30 in summer, and 7 in winter, and after 5 in the afternoon. But a young babe cannot, as a rule, be kept out with safety for more than three hours during the day in any part of India.

Until the child reaches the age of one year he should be allowed to sleep at any time, and it is a great mistake to rouse a child, at this early age, from healthy, natural sleep.

Crying. Infants cry more often from indigestion caused by improper feeding or over-feeding than from hunger, and although they may be pacified for a time by giving the breast or bottle, they soon cry worse than before. There are many other causes which give rise to fits of crying, such as thirst, fright, and in India, especially, the irritation produced by the strong light. Sudden outbursts of crying may be due to discomfort arising from tightness or wetness of underclothing, pins, fleas, mosquitoes, or other insects.

Crying due to indigestion and griping is loud, often accompanied by vomiting or discharge of wind, and the infant writhes and draws up its little legs, whilst the cry from inflammation in the chest is short and stifled, because pain is caused by the movements of the chest. It is, therefore, important to carefully notice the nature of the cry of the infant, for such furnishes an indication of how relief may best be given.

CHAPTER X.

CARE OF THE CHILD.

Next to a good English nurse ranks, as a rule, the East Indian nurses, and where such have been brought up and trained in European schools they make much better servants than ordinary ayahs. Nevertheless, the ayah is the nurse found in most Anglo-Indian homes, and it may not be out of place here to lay down a few rules for the guidance of mothers in directing her duties.

When the Babe wakes in the Morning about 5.30 to 6 o'clock the first duty of the ayah is to "hold him out," and the next, when he is old enough, to give him his bath, after which he must have his first bottle of Mellin's Food, which must be prepared in accordance with the directions.

If during the night he has perspired freely, the whole skin should be carefully rubbed with a soft towel before bathing, care being taken to avoid draughts. The skin of a baby is very delicate and is much more susceptible to changes of temperature than that of an adult. The child, should, therefore, be rapidly sponged with water at about 90°F.

The soap used should be of good quality. It should not be artificially coloured or perfumed; the colouring and odorous matters so largely employed in preparing toilet soaps are only too frequently the means adopted to mask inferior materials employed in their preparation. These added substances never increase the value of a soap as such, and, on the other hand, they act as irritants to delicate skins. After the bath the skin should be carefully dried with a soft towel, and some good dusting powder should be dabbed into the folds of the arm-pits,

groins, and buttocks with a soft puff. Where the infant is given two baths a day it is not necessary to soap the whole of the body, and at all times the ayah should be sparing with the use of soap, but not with the towel.

Attention should be paid to the finger and toe-nails. They should be cut straight across and not down at the sides, or an ingrowing nail may result.

Care of the Ears. Care and attention must be given to the ears of the new-born baby. They will be small and well set, or coarse and protruding, in after life, according to the care which they receive from birth until the child is six or seven years old. Never under any condition allow them to become crumpled while the infant is asleep, and if they show a marked tendency to protrude, a soft muslin cap should be tied on during the night. As the child grows older, if the ears still show an inclination to stand out from the head, a good plan is to softly massage them and press them backward at the same time using the nightcap.

Care of the Scalp. While the child is very young the head should be washed daily, little soap being used, but when the hair becomes so long that there is a danger of chill after washing then once a week the child's hair and scalp should be shampooed.

Before taking the Child out the ayah should open all windows, and put the mattress, bedclothes, and mackintosh to air, and place the empty food bottle and teat in filtered water, containing a pinch of borax, to soak. The baby should, in most parts of India, be ready to go out at 6.30 or 7 o'clock.

The mother should prepare a second bottle of food for the child's return, about 8 or 8.30, or, where a second ayah is kept, of course this duty would devolve upon her.

The Feeding Bottle. For successful hand-feeding it is of paramount importance that the food should be given in a proper manner, and, therefore, care must be taken to select a suitable feeding bottle. The shape

must be such that the bottle can be quickly, easily, and thoroughly cleaned. For this reason a Mellin's Feeding Bottle should be used, for it not only fulfils the above conditions but is stronger and consequently more durable even when roughly used, and it is graduated to show the actual quantities to be given to children of different ages.

After each meal the feeding bottle and the nipple should be at once washed and thoroughly brushed out and then kept in cold water to which a little borax has been added until next required. Young mothers will find it better to have two bottles in use, one of which should be soaking while the other is in use. Both the bottle and nipple must be kept scrupulously clean. To the disregard of this precaution may be traced many cases of diarrhoea and even more serious illness.

The following rules must be attended to in the case of hand-fed children :—

1. The feeding bottle should be taken away as soon as the contents are finished.
2. If the child refuses to empty the feeding bottle it should be taken away at once. There is a constant tendency on the part of ayahs and inexperienced mothers to overfeed infants, and this error the young mother should carefully guard against.
3. If any food remains in the bottle at the end of the meal it should be thrown away, and on no account be warmed up for the next meal.

On the return of the Ayah from the early morning walk about 8 or 8.30 a.m., the child should be "held out" and then fed.

After Breakfast the baby should be "held out" again, or placed on the "stool" until the bowels are moved. Restlessness may be prevented by toys or picture-books, when the baby is old enough to be interested in such things.

The Morning Sleep. At 11 or 12 o'clock the infant should be completely undressed and placed in a darkened room for midday sleep for from two to three hours. The morning sleep should be kept up in all cases where possible until the child is at least four years old, and it may even be continued with advantage until the age of five years. On waking the child should be dressed and fed again about 1 or 1.30. The next meal should be given about 4.30 to 5. The child, if old enough, may then be dressed for going out, and taken out for an hour.

At 7 o'clock the evening meal should be given before the child is put to bed. Many young Anglo-Indian mothers make the mistake of supposing that children must be put to bed as early in India as in England, forgetful of the fact that if a child sleeps for two or three hours during the heat of the day it does not require the same amount of sleep at night. In most parts of India a child cannot go out in the afternoon until after 5 o'clock, and as its age increases it becomes more and more necessary that it should stay out as long as possible, usually until about 6.30 or 7 o'clock. Of course, the hours will vary somewhat in different stations, but these simple rules hold good over vast areas in India.

When the child is put to rest, care must be taken that the blankets, mattresses, sheets, etc., are clean, sweet, and perfectly dry. A good plan adopted by many experienced Anglo-Indian mothers is to place the child on a mattress upon the floor. The great advantage of this plan is that the infant may be placed with ease in any part of the house to secure coolness. The infant should always when sleeping **be protected from mosquitoes** by a light mosquito net. The best forms are shaped somewhat like a dish cover, and are made of light cane and gauze. By this means the necessary protection is provided and ventilation not unduly interfered with.

Importance of Fresh Air and Exercise. The young infant requires fresh air and exercise. In most parts of India a baby may usually be sent out carefully clothed after it is two weeks old. The ayah should not be allowed to sit about and gossip, but she should walk about with the baby because the motion thus imparted to its body gives the necessary exercise. When in the house, even while awake, the young baby should be carried in the arms, frequently changing position, as gentle movements are necessary for the health of the internal organs and bodily development.

Use of the Nostrils. Infants should be trained as early as possible to make proper use of the nose for breathing. They should be taught to breathe as much as possible with closed mouth.

When the child is out it is necessary that he should be sheltered from the direct sun heat, and as soon as he is old enough a sun topee should be worn. A mother should know exactly where an ayah takes her children, and should see that the directions which she gives on this subject are followed in detail.

The ayah should not be permitted to give native sweetmeats to the children in her charge. The mother should insist on great personal cleanliness on the part of the ayah. She should be made to take a daily bath, and to wear clean clothes.

Importance of Regular Habits. It is of the greatest importance that regularity should be observed in the management of infants. The routine of the day should proceed like clockwork. The result will be that gradually the child will acquire habits of regularity. Its meals and bath must be given at exactly the same time every day. It should be put to bed at the same time every morning and evening. It should be put on its chair at the same times every day. It is possible to train a child to use its chair at regular intervals at a very early age, and the inculcation of regularity in this

respect has an important bearing upon its after health and well-being. By the time it is nine or ten months old it will, if properly trained, in all ordinary cases have learned to wait to be put on its chair and not wet its diapers. The two chief causes of ill-health during early childhood are constipation and diarrhoea. The former condition frequently arises from the inability of the child to properly digest the food, and it is sometimes caused by carelessness on the part of the nurse in inducing regular habits.

Learning to Walk. When the child is first learning to walk great care should be taken to guard against its standing on its feet for too long a time, and it should not be allowed to get tired walking. If left to itself it will stand for a while, and when tired will sit down or crawl about. For this reason it should not be encouraged or urged to stand or walk; but its spontaneous efforts should merely be watched and guided. Knock-knees or bow legs, frequently result from much standing and walking before the legs are strong. When it is out of doors vary its amusement by giving it a ride in its carriage part of the time, letting it walk only for short intervals. Do not urge it or even permit it to lift heavy things, such as would tend to tax its strength.

When a child is walking and holding on to an older person's hand, the child's arm should not be stretched to its full length. The grown person should see that the child's hand is no higher than its shoulder—even a little lower is better. It must be allowed to use the leader's hand as a support, and must not be pulled along, but should be permitted to go as fast or as slowly as it likes.

A young child should not be lifted by the arms. The hands should be placed upon its body one on each side just below the armpits and it may then be raised gently but firmly. The ayah should carry the child on her right and left arm alternately.

CHAPTER XI.

TEETHING.

Care during Teething. The teething period is usually a trying time for both the mother and child in India, and the complications which arise during teething sometimes lead to serious ailments. Not that the ailments which so frequently accompany teething should be considered as caused by this perfectly natural process of development, but as rather consequent upon the unstable condition of the physical economy at this stage of life. This is a period of great activity in the growth and development of a child, and the balance of health is frequently upset by comparatively minor causes, which at other times under more stable conditions of body would produce little or no ill effect. It is this unbalanced condition which causes the extreme susceptibility to ailments at the teething period, and in tropical climates the very greatest care is required in the management of the infant. In fact, under ordinary conditions of management this must be regarded as the most critical period in the baby's life.

The age at which a Child cuts the first Tooth varies in individual cases; the majority of children, however, begin to cut their teeth when from four to six months of age. Some very vigorous and forward children may begin as early as three months, and with those of weakly constitution teething may be delayed until the eleventh or even twelfth month. Teething seems to be less painful and more rapid in India than in England; but the attendant disturbances of health and accompanying ailments need greater care and attention.

During teething, in ordinary cases, the child grows irritable, refuses food at the regular times, and becomes feverish at night, and an inexperienced young mother may imagine that the baby is about to be very ill; as a rule, directly the teeth appear, these symptoms pass off.

At the age of two and a-half years a child, as a rule, has his first complete set of teeth; these are known as the **twenty milk teeth**. These teeth are usually cut in the following order in each jaw:—

| | | |
|--|-----|------------|
| 2 Central Incisors, or Front Cutting Teeth | ... | 6th month. |
| 2 Lateral Incisors, or Outside Cutting Teeth | ... | 9th „ |
| 2 First Molars, or Lateral Grinders | ... | 12th „ |
| 2 Canine, Dog, or Eye Teeth | ... | 18th „ |
| 2 Second Molars, or Posterior Grinders | ... | 24th „ |

Of these the teeth in the lower jaw make their appearance first, and the corresponding teeth in the upper jaw soon follow the development of those below. The teeth which give the greatest trouble to the child are the second molars, which are usually cut about the end of the second year.

The second set, or **permanent teeth**, begin to make their appearance about the sixth year.

| | | | | | |
|------------------|-----|-----|-----|-----|------------------|
| First molars | ... | ... | ... | ... | 5th to 7th year. |
| Central incisors | ... | ... | ... | ... | 7th to 8th „ |
| Lateral incisors | ... | ... | ... | ... | 8th to 9th „ |
| First bicuspid | ... | ... | ... | ... | 9th to 10th „ |
| Second bicuspid | ... | ... | ... | ... | 10th to 11th „ |
| Canines | ... | ... | ... | ... | 11th to 12th „ |
| Second molars | ... | ... | ... | ... | 12th to 13th „ |
| Third molars | ... | ... | ... | ... | 17th to 21st „ |

While a child is teething several symptoms occur, none of which need necessarily be dangerous, but if neglected they may lead to serious after-results.

For some few weeks before the appearance of any teeth the child dribbles at the mouth, the eyes water, it suffers from thirst, diarrhoea, cough, and often from fever. Where the teeth come in rapid succession the

symptoms are often more severe, attended by convulsions, inveterate vomiting, squinting, ear-ache, and various forms of skin rashes.

Many of these symptoms are merely the result of the nervous irritation set up during the teething period, and unless they are severe, medical aid is unnecessary.

Dribbling during teething is a good sign, and as a rule the less painful and irritating the cutting of teeth to the child, the more marked the dribbling becomes.

Increased attention should be devoted to the supply of fresh air and exercise, warm baths at night should be given, the head must be kept clean and cool, and attention should be directed to the diet in order to secure that the child has an abundance of proper food. These simple hygienic measures go a long way towards making dentition painless for the child, and reducing the anxiety of the mother.

Should the child suffer from sickness after feeding, the milk should be diluted with lime-water, or a pinch of bicarbonate of potash may be added to each bottle.

The action of the bowels should be attended to, and regular normal excretion should be maintained by occasional doses of fluid magnesia. In cases of cough during teething, a teaspoonful of glycerine should be given two or three times a day. Sometimes tooth cough is attended by marked constipation; in such cases doses of castor-oil emulsion should be given.

Convulsive symptoms should be immediately carefully attended to, for infantile convulsions not infrequently lay the foundation of abnormal nervous conditions, which may lead to epilepsy in after life. Cooling, mildly aperient medicines should be given, and if the symptoms do not disappear, medical aid must be sought.

When a fit of convulsions comes on, the head should be sponged with cold water, and the child should be placed bodily in a bath of warm water at about blood

heat—viz. 98° Fahrenheit. After removal from the bath the child must be wiped with a soft towel and placed in warm blankets, care being taken to keep the head cool.

Where dentition is painful and the gums become swollen and inflamed, the child will shrink or cry when the gums are touched with the finger, and in such cases it is advisable to obtain medical advice as soon as possible, and if thought necessary to have the gums lanced. When dentition is normal, the gentle friction of the gums with the finger is soothing to the child.

It is of the utmost importance that during teething the mother should exercise watchful control of the ayah, who should be strictly cautioned against giving to the child any drug or soothing syrup. The use of opium and mixtures containing opium and Indian hemp is frequently resorted to, and a mother should carefully guard against their use in any form, save, of course, under medical advice.

It is very important that the regular development of the teeth be watched and that the aid of the dentist be sought at an early period in order to correct any irregularities. From quite an early period the teeth should be brushed every day with a small soft tooth brush; once a week they should be cleaned with any mild tooth powder or wash.

CHAPTER XII.

VACCINATION.

Vaccination is the operation by which an infant or adult is inoculated with a material which is produced in cow-pox. The disease known as cow-pox is a peculiar complaint which affects the teats of cows, and in the early history of vaccination it was noticed that those persons who were in the habit of milking cows so affected secured immunity from ordinary small-pox. These observations led Jenner to the idea of introducing beneath the human skin some of the fluid produced in the eruptions present in cow-pox, with the object of affording protection against small-pox. It was found that the two diseases, cow-pox and human small-pox, were antagonistic to each other; that the vaccinia of the former, introduced beneath the skin, produced such changes in the body as to immunise the blood against the human disease, small-pox. It appears that **the efficiency of the vaccination** does not in all cases remain throughout life, but by re-vaccination complete immunity from the loathsome disease may be secured. Even in cases where a vaccinated person does take small-pox the disease runs usually a comparatively mild and simple course. In England, and in European countries generally, the disease is so under control that one rarely meets a person marked by small-pox. But in India, and the East generally, where vaccination is by no means universal, there is a high death rate from

this complaint, and it will be observed what a large percentage of the natives are deeply scarred and pitted by the disease.

The Liability to infection from small-pox is therefore far greater in India than in England, in consequence of its prevalence among the native races, including the Hindoos of all castes. Every Anglo-Indian mother, therefore, should seek at the proper time protection for her child from this vile disease. The actual operation of vaccination is a simple one, and if the usual precautions are taken by the operator, and cleanliness and care exercised by the ayah and mother, no ill effects should arise. Nevertheless, slight disturbances are produced in the health of the child, which may temporarily cause the mother some anxiety at this period.

The time at which vaccination may best be performed will vary under different circumstances, but in all ordinary cases the operation should be performed **between the ages of six weeks and three months**. In India, however, where the child is healthy, it is advisable to have the operation performed as early as possible, save that it is best to avoid the rainy season of the year, or the period of the monsoon, for at this time complications are more likely to arise.

When the operation has been performed no special care is required, save the precaution that the inoculated part shall be kept scrupulously free from external causes of irritation. Rubbing, scratching, and dirt must be carefully avoided. For the first eight days after vaccination the part should need only the ordinary shield against scratching. About two days after the operation the punctures made will become somewhat swollen and hard; on the fifth day a small circular vesicle, with raised edges and a depressed centre, is seen. By the eighth day this vesicle becomes distended with a clear fluid, and is either pearl-coloured or somewhat

yellow. From the eighth to the tenth day a small inflamed ring makes its appearance round the base of the vesicle, and this extends for some two or three inches round the central spot. About the tenth day, if all goes well, the swelling begins to disappear, and the little vesicle turns brown and becomes scaly, forming a scab which drops off about the twenty-first day, leaving a permanent discoidal scar. If the operation does not follow this course, especially if the vesicle appears earlier than the fifth day and the inflamed ring is not present, the vaccination must be repeated.

Treatment of the Child after Vaccination.—

The most important precaution is to keep the arm free from all likely causes of irritation. The dress sleeve should be loosened. This is best done by opening the seams of the sleeves of the dresses to be used, and sewing in tapes, which may be employed to fix the sleeve as loosely as desired.

A dusting powder prepared from equal parts of oxide of zinc and boracic acid will be found most useful in subduing the heat of the spots.

Where the irritation is more marked, and medical advice is not at hand, relief may be afforded by loosely binding up the part with pieces of old soft linen, which are kept moist by dipping them in a solution of borax in filtered water. Where the spots become very much inflamed and the child evidently suffers considerable pain, hot fomentation may be applied. But unless it is absolutely necessary to resort to this mode of relief, moist applications should be carefully avoided, as they only tend to soften the heads of the vesicles and prevent them from drying.

Source of Vaccination Material. This is a matter about which many young mothers in India give themselves unnecessary anxiety. In European countries calf vaccine lymph is almost always employed for the vaccination of children, and in England its use has become quite

general ; in India, however, although it is increasingly employed, difficulties exist in obtaining fresh supplies. In Bombay and other large cities vaccination is generally performed direct from the calf. Outside the large cities of India the origin of vaccination material usually resolves itself into the question of white child or native. A mother should understand that vaccination is just as efficient from a healthy native child as from a white one. The question of healthiness is one for the medical man, and a mother, having selected with care her medical adviser, must trust to his knowledge and skill. Remember that it is against the interests of any medical practitioner to vaccinate from, or recommend vaccination from, a child whom he knows to be unhealthy. All that a mother can do is to learn as far as possible the antecedents of the child from whom it is proposed to vaccinate her infant, and ascertain that the medical man is informed of the same.

In the preceding lines we have dealt with the objects and methods of vaccination of Anglo-Indian children ; but while an Anglo-Indian mother, as a rule, understands something of the advantages of this preventative measure, the same is not true of the bulk of the natives. In spite of the good hygienic work which has been done by the Zenana Missions, and the improvements in sanitary education brought about by the National Indian Association, progress is but slow, and much remains to be done to educate the masses in the advantages of the simplest matters of hygiene.

CHAPTER XIII.

DIET IN MINOR AILMENTS.

Diarrhœa is one of the most common ailments of infants in hot climates, and unless it is of a very mild character and the child only slightly out of health, the medical attendant should be sent for. In India, Burmah, and Ceylon it must be regarded as the most serious form of illness which a baby can contract. The causes of diarrhœa are varied, and consequently the symptoms to which they give rise differ somewhat in detail. It must be remembered that this trouble is much more common with hand-reared infants than with those that are breast fed.

Simple Diarrhœa is generally brought about by unsuitable food.

Where the baby is breast fed, then attention should be directed at once to the mother's health.

If the child is being hand-reared, as so frequently becomes necessary in India, in the large majority of cases it will be found that the distressing symptoms arise from one of four causes—

- (a) The use of farinaceous food.
- (b) Some peculiarity of the milk employed.
- (c) The use of a bad form of feeding bottle.
- (d) The use of unboiled water.

A healthy baby for the first six months should have two to three motions in twenty-four hours. Any greater number than this indicates a tendency to diarrhœa. The excreta should be of a golden yellow colour and nearly devoid of odour, or at most, only slightly faint.

If the baby does not refuse food, or otherwise seem unwell, it would not be advisable to check the activity of the digestive organs. Should the motions become more frequent, being passed immediately after food is taken, and if they are watery, slimy, or greenish in appearance, then it is pretty certain that something is seriously wrong. An effort should be made to discover the causes.

Importance of Change of Diet in all cases of Diarrhoea. Where the child is hand-reared and a farinaceous food of any kind is in use, it should at once be abandoned and Mellin's Food prepared and employed as directed on page 80 should be substituted. If the child is already being reared upon a diet of Mellin's Food, and symptoms of diarrhoea make their appearance, in mild cases it will be necessary to reduce the quantity of milk in mixing the Mellin's Food and to substitute lime water for from one-third to one-half of the water indicated in the general directions given.

Goat's milk should be avoided, and the cow's or buffalo's milk, if used, should be examined, and if found to be curdy in nature, then lime water must be employed to dilute the milk in mixing the food, or the child should be given citrated milk the preparation of which is described on page 37.

Since diarrhoea troubles are very frequently associated with the condition of the milk employed, it is advisable in such cases to change the source of supply at once. The water, too, employed in mixing the food is sometimes responsible for the symptoms, and only water which has been previously well boiled is permissible for this purpose. Water which has been filtered alone must not be relied upon, for there is no form of filter which can be depended upon to yield satisfactory results in the hands of native servants.

If a bottle provided with a tube has been in use, it should at once be discarded and a Mellin's Feeding Bottle should be substituted.

In more acute cases where the infant cannot retain milk, no hope of relief can be entertained until this is excluded from the diet. In such cases Mellin's Food should be prepared with water alone by dissolving a tablespoonful in half-a-pint of hot water, or barley water may be substituted for ordinary water. The addition of a tablespoonful of lime water to the mixture, prepared with barley water, has proved very valuable in some cases of simple diarrhoea. As thus prepared, the Mellin's Food may be given cold; and in cases where the vomiting or purging is severe, a teaspoonful only should be given at a time, repeating it at intervals of ten minutes. When the vomiting and purging have been arrested, the child may be allowed to suck slowly from the feeding bottle. After a couple of days have elapsed without the return of the symptoms, a little milk may be cautiously added to the diet; this should be very gradually increased as the child's stomach gains vigour. In a case of diarrhoea the child may seem to be hungry when, in reality, he is thirsty, and food being given the stomach under such circumstances is overtaxed and the complaint is aggravated. Cold water which has been boiled may be freely given.

A Second Form of Diarrhoea commonly seen in infants is marked by the rapid passage of the food through the stomach and bowels, from which it is excreted often apparently unchanged, in curd-like masses. The infant suffering from this form of diarrhoea usually has frequent attacks of sickness, and suffers from violent griping pains. This condition is usually set up by the irritation caused by improper food or by exposure to cold night air, and is most likely to arise from this cause in the hill stations of India. In the early stages a very small dose of castor-oil, given in the form of an emulsion, is very helpful.

The emulsion may be prepared by mixing three drachms each of gum arabic and loaf sugar to which

two drops of oil of peppermint and six drachms of water should be added. The whole must be thoroughly rubbed up in a mortar with the gradual addition of one ounce of castor oil and sufficient water to make the whole up to four ounces. The emulsion must be well shaken before use, and one half to one teaspoonful should be given every four to six hours. It may be obtained of any chemist.

The Third or Inflammatory form of Diarrhœa is the most dangerous, for in this condition more or less acute inflammatory changes of the coats of the stomach and bowels are set up. The object of the mother should be to establish safeguards against this complaint by the study and practice of hygienic conditions. The questions of treatment and cure are beyond the scope of this little work, but it may be pointed out that preventative measures lie chiefly in the direction of attention to diet and clothing.

To guard against Diarrhœa. Infantile diarrhœa in the tropics, like the summer diarrhœa which proves so fatal to infants during hot summer weather in colder climates, must be looked upon as a complaint which needs immediate attention, in consequence of its extremely dangerous nature.

The disease is essentially preventable, and as explained above, it is often closely associated with a want of care in the selection of the food or in the preparation of it, or it has its origin in the uncleanness of the apparatus used in the preparation of the food, or the improper form of feeding-bottle employed.

Diarrhœa is easier to prevent than to cure once that it sets in; with a view to aid in its prevention we describe below the precautions to be adopted.

The following notes on summer diarrhœa in infants were recently published in the *British Medical Journal*, and although the whole of the advice is not perhaps

applicable to the Anglo-Indian mother, yet so much of what is stated applies not only during the summer in temperate zones, but at all times in the tropics that this valuable information is reprinted at length.

"The step taken by the authorities of the Paddington Green Children's Hospital, London, in issuing the following card of instructions to mothers is one that might be followed with advantage by other public bodies :

"Summer Diarrhœa in Infants. Hundreds of infants die during the summer from diarrhœa and sickness, which may, with proper care, be prevented, but cannot always be cured. If mothers will read carefully and carry out the following instructions, they may hope to save their infants from dying of these complaints.

"I. Breast-fed Babies. Diarrhœa and sickness are much more common in bottle-fed than in breast-fed babies, therefore mothers should always suckle their infants when possible for eight or nine months.

"But infants should *not* be weaned during the hot weather.

"To Prevent Diarrhœa in Breast-fed Babies. Suckle the baby regularly, *not* every time it cries.

"Give the baby *nothing* but the breast milk and water to drink.

"Wash the mother's breasts and nipples before and after suckling.

"Wash the inside of the Baby's mouth with a clean wet rag after nursing.

On no Account Give Babies Fruit, Rice, Ice-cream, Fried Fish, or Bits from their Mother's Plate.

"To strengthen herself, the mother should take milk and plain food, *not* beer or stout or spirits.

"Nursing mothers should avoid over-work and fatigue, and should remember that worrying or quarrelling may spoil their milk, and give the baby diarrhœa.

“In summer any dirt entering the mouth may produce diarrhoea. Therefore, do not let babies suck dirty soothers, teats, comforters, or thumbs.

“**II. Bottle-fed Babies.** Summer diarrhoea in infants is chiefly due to bad milk and dirty feeding-bottles and teats.

“In hot weather milk quickly turns sour or becomes tainted by dust, dirt, and flies, and may easily bring on diarrhoea unless the following *precautions* are taken:

Buy the milk *twice* a day—not *once* only—and get the best cow's milk you can, as cheap milk is always dangerous.

Boil it at once for one or two minutes.

Then place it in a covered vessel in a basin of cold water and keep cool. The milk must be covered over to prevent dust and flies from reaching it.

Always taste the milk, in a spoon, before putting it into the bottle, to see that it has not turned sour. Do *not* put the teat in your own mouth at all.

Do *not* keep any milk in the bottle for the infant's next meal. Use it for yourself or the rest of the family.

The bottle should be boat-shaped, with an india-rubber teat, but *no* long rubber tube.

The bottle should be scalded out after use, and cleaned with a bottle brush, which should be boiled immediately before using.

After each feed the nipple should be turned inside out and washed, and kept with the bottle in cold water.

Good milk is often spoiled by dirty bottles.

When fresh cow's milk cannot be obtained, or the milk has turned sour, use the best sweetened condensed milk.

Get small tins, as after the tin is opened the milk will soon go bad. Keep the tin in a cool place.

Cover an opened tin with clean muslin or butter cloth to protect it from dust and flies, and keep in a cool place.

In any case of sudden diarrhoea or vomiting stop the milk at once, give only plain water which has been boiled, or barley water, and take the baby to a doctor without delay.

Do *not* think that the diarrhoea will pass off, as the baby may be so ill in twenty-four hours that no treatment will be of any use.

Do *not* be afraid that the baby will starve if only plain water or barley water is given for a day or two. There is no danger of this.

Do *not* think when a baby cries or is sick that it only wants more food.

Do not store cow-dung near the house.

In hot weather do *not* keep bones, stale vegetables, or fruit and other rubbish for the dust bin, in the room or house. Burn as much of the rubbish as possible. Rubbish favours the production of flies, and flies often carry poison to the food they settle on.'

"The instructions seem admirably adapted for their purpose. More emphasis might, perhaps, have been laid on the fact that in summer infants, like adults, suffer from thirst, and that in many instances a few teaspoonfuls of cold water are more grateful to them than milk in any shape. In very hot weather it is advisable to diminish the amount of cow's milk given, either by a further dilution of the strength or a lessening of the quantity of each meal, and to make up the deficiency in fluid by the administration of cold water at intervals. Instead of sweetened condensed milk, we would have preferred a good brand of unsweetened, which, after opening, should be treated in the manner advised for the storing of cow's milk.

Importance of Nourishment in Diarrhœa.

Nothing is gained, in fact much time is lost, by withholding nourishment for longer than twenty-four hours, and if the nutritive material is carefully selected it may be given as soon as there is evidence of the intestinal tract being free from accumulated undigested food, with the result of less rapid loss of weight and less danger of sudden prostration. There is no question as to the great value of nourishment given early in diarrhœa, but the diet must be carefully selected to serve certain purposes.

Value of Carbohydrates in Diarrhœa. Of all the food elements, carbohydrates in the form of maltose and dextrins stand at the head as the nourishment to be selected in diarrhœa. A small amount of protein to make up for the loss of body protein is next in importance, and on account of a constant loss of salts from the tissues during an attack of diarrhœa, it is desirable to furnish alkaline salts in the diet. As the digestive powers are very low, food constituents must be chosen that are in a condition ready for assimilation, and capable of immediately furnishing available nutrition.

Mellin's Food in Diarrhœa. The Mellin's Food and water mixture suggested in the following formula contains the carbohydrates maltose and dextrins (no starch), cereal proteins, and is alkaline in reaction. The caloric value is 6·2 to each fluid ounce (three times greater than barley or other starch waters as ordinarily made). The carbohydrate, maltose, is available nutrition, for maltose may be at once utilised without first being transformed into glycogen—a most important point in consideration of the urgent need for nutrition at this time. Utilizable carbohydrates also act as spacers of body-protein while the small amount of nitrogenous food in the diet, under the same protective action, is assimilable nourishment. The restraining effect of these carbohydrates upon putrefactive bacteria, and their known value in favouring a retention of fluids in the body also contribute to the value of the mixture suggested.

The following mixture should be given cold, or very warm (not lukewarm) in small quantity, frequently repeated. The baby's condition will determine the amount of food and frequency of feeding.

| | | |
|-----------------------------|-------|---------------------------|
| Mellin's Food | | 4 tablespoonfuls (level). |
| Water (boiled, then cooled) | | 16 fluid ounces. |

Skimmed Milk in Diarrhœa. As soon as the stools lessen in number and improve in consistency and character, small amounts of skimmed milk should be gradually substituted for equal amounts of water, until the proper proportions of Mellin's Food, milk and water, adapted to the age of the baby, are reached,

As the fat of the milk is likely to be digested with much difficulty by infants after an attack of diarrhœa, it is usually advisable, subject to medical advice, to remove a portion of the cream from the milk, until the baby has fully recovered.

There is probably no better way of making this matter perfectly clear than to assume a typical case and follow out in detail the suggestions already given ; the following is an example of successful treatment in such a case.

A baby about three months old with a severe bowel disturbance having from six to twelve or more loose, watery and foul-smelling stools daily. The first thing to be done is to thoroughly clear out the intestines by such means as the medical adviser directs, many favouring castor oil. After this a most effective procedure is as follows :—

| | | |
|-----------------------------|-------|-------------------------|
| Mellin's Food | | 4 level tablespoonfuls. |
| Water (boiled, then cooled) | | 16 fluid ounces. |

Give two or three ounces every two hours, continuing until the movements are reduced in number to three or four a day, and are improved in character. This may take two or three days, according to the severity of the trouble. Meanwhile the baby is having enough food material, in suitable form, to maintain strength. Modify the mixture as follows and give 3 ounces every 2 to 2½ hours.

| | | |
|---------------|-------|-------------------------|
| Mellin's Food | | 4 level tablespoonfuls. |
| Water | | 14 fluid ounces. |
| Skimmed milk | | 2 fluid ounces. |

In twenty-four hours, if the stools do not increase, add 2 ounces more of skimmed milk, leaving out 2 ounces of water. Continue to make this change every day or two until the mixture is as follows, of this give 4 ounces every 3 hours.

| | | | |
|----------------------|----|----|-------------------------|
| <i>Mellin's Food</i> | .. | .. | 4 level tablespoonfuls. |
| <i>Water</i> | .. | .. | 8 fluid ounces. |
| <i>Skimmed milk</i> | .. | .. | 8 fluid ounces. |

At this time the fat of the milk should be gradually replaced, and is best done in the following manner : Instead of using from the bottom 16 ounces of a quart of milk, use from the lower 24 ounces, then in two or three days use from the lower 28 ounces, after this take off one ounce less from the quart of milk every few days until whole milk is reached. The Mellin's Food may now be reduced to the regular amount advised for use in normal conditions.

Dysentery not infrequently attacks quite young children. The symptoms which are most likely to make their appearance in the hot weather are fever, much looseness of the bowels with straining, the passage of viscid or slimy motions, charged with much mucus and, in the latter stages, blood ; the griping is very marked, and the straining violent. The infant suffering from this condition rapidly loses flesh, becoming pale and exhausted. This disease takes but a few days to reduce even a robust and vigorous child to an emaciated condition. A warm bath is always soothing, and often does good, and in any case the child should be kept warm and sleep induced. A simple, but very useful remedy is white of egg beaten up in diluted milk or cooled boiled water ; this is nourishing and somewhat binding in its action. Since this condition is attended with considerable danger, medical aid should be obtained as soon as possible.

Constipation is the condition in which the excreta become hard and changed in colour. Many young infants suffer from this ailment, yet few mothers treat the matter with the serious and immediate attention which it deserves.

Where the child is breast-fed and constipation is set up, in most cases it will be found that the mother's health is out of order, and a little attention to

this matter will lead to the disappearance of the symptoms in the child. The remedial measures which the mother should adopt lie in the direction of more exercise, greater care as to diet with increased use of vegetable foods and fruits, and doses of Mellin's Fluid Magnesia.

Bottle-fed infants frequently develop a tendency to constipation during the first few weeks of life in consequence of the use of improper artificial foods. Farinaceous foods act as irritants to the bowels; and where they are employed, constipation is frequently associated with short and intermittent attacks of very offensive diarrhoea. The child should in such a case at once be placed upon a diet of Mellin's Food, prepared and employed according to the age, when the symptoms will usually disappear.

Again, where an infant is being reared upon a diet of Mellin's Food prepared as directed on the preceding pages, constipation is sometimes caused by inability on the part of the child in certain cases to digest the milk. In such cases a larger proportion of Mellin's Food must be employed in preparing the bottle than that directed for average conditions. In some cases it is advisable to decrease the proportion of milk at the same time. Between the feedings cool boiled water should be given to the baby, and this should be used freely upon the first indication of constipation. Care should be taken to keep the feet and limbs warm.

It is a very bad plan to give strong purgatives to infants for constipation, for they tend to lower the healthy tone of the digestive canal. By slight variations in the proportion of the ingredients of the food it usually becomes possible to correct this distressing condition. Where such means fail, then gentle laxatives, in the form of mild salines, such as Mellin's Pure Fluid Magnesia, may be given with advantage.

Where the symptoms are very pronounced and persistent, an ordinary aperient may be used—Mellin's tasteless castor-oil is one of the best, given in doses of a half to two teaspoonfuls according to the age and condition of the child. Mellin's suppositories will induce easy evacuations without fatiguing the stomach.

Constipation is sometimes caused by chills. This form of sluggish activity of the bowels and liver is very common in India, and especially so amongst weakly children; it is usually accompanied by loss of appetite and the passing of solid clay-coloured or pale motions. The best remedial measures are :—

- (a) Change of diet. Mellin's Food prepared with twice the bulk of water advised in usual cases for a child of this particular age may be given.
- (b) Hot fomentations over the belly and gentle rubbing.
- (c) Warm clothing and protection from draughts.

Another form of infantile constipation which is extremely common arises from a want of muscular tone, or weakness of the muscular coats of the digestive canal. The employment of abdominal friction, coupled with a liberal diet of Mellin's Food, prepared as directed according to the age of the infant, will usually remove the symptoms.

Prevention of Constipation. Much may be done to cure constipation by care in inducing regular habits both in feeding and excretion. An infant should be fed at regular intervals and held out at the same time each day. A child's bowels for the first six months should be opened two to four or not more than five times in the twenty-four hours. The excreta should be neither hard nor very fluid, and they should be of a bright yellowish-brown colour. The quantity of urine passed by an infant is proportionately greater than that of an adult; in appearance it should be clear and of a very pale straw colour, not turbid nor cloudy.

Watch the Infant's Motions. If the motions are very solid and cause pain, the abdomen should be rubbed with the hand, or with some oily substance, such as ordinary salad oil. The friction should begin at the right lower portion of the abdomen and pass upward and to the left down and back again in a somewhat elliptical fashion. It should be continued slowly, gently, but firmly for ten to fifteen minutes.

As the child grows older, two or three teaspoonfuls of plantain mashed up in milk, with a small quantity of Mellin's Food, given before breakfast will usually rectify any ordinary sluggishness or irregularity of this character. Another useful corrective, which may be given to quite young infants who may develop symptoms of constipation, is ripe orange juice from one to three or four teaspoonfuls per day, the first to be given on waking in the early morning.

Flatulence is closely connected with indigestion, and although quite without danger, it often causes the child considerable pain. The carelessness and ignorance of ayahs have much to answer for in this matter. They frequently allow babies to suck the teats of empty feeding bottles, and often bind their little charges too tightly, both of which causes tend to induce flatulence. When the symptoms are slight, the child should be laid on its belly or back, and gently but firmly rubbed ; a warm bath, too, will in most cases relieve the symptoms. A change in the proportion of the Mellin's Food and milk, or change of milk supply alone, and attention to the points mentioned above, will usually be followed by the disappearance of the symptoms. Peppermint Cordial is very useful in cases of flatulence in infancy.

Gripping is a frequent source of distressing symptoms in very young infants which cause the mother much anxiety. The symptoms are : violent screaming, without any apparent cause ; the legs are drawn up ; the motions become slimy and usually greenish in colour.

In the case of breast-fed children the cause of this griping is frequently to be found in some errors in the dietary of the mother. It cannot be too strongly urged that the diet of a nursing mother should be simple, abundant and nutritious, without great variations.

In the case of hand-reared infants carelessness on the part of the ayah in preparing the food—such as the use of sour milk, or of milk just upon the point of turning, or of a bottle which has been but imperfectly cleaned—is a frequent cause of stomach-ache, and such errors should be carefully guarded against.

A mother should never permit a part of a meal to be kept from one feeding time to the next, but the baby's bottle should be emptied at once at the end of the meal and thoroughly washed out and then placed in boiled water to soak. The smallest quantity of soured milk or food left in a bottle is enough to upset the baby, and in India milk will keep sweet but for a very short time. The greatest care should therefore be exercised to guard the babe against this serious danger. Where griping arises from over-feeding, the best remedy is a dose of castor-oil.

Protrusion of the bowel may be caused either by constipation or diarrhœa. The bowel comes down through the anus, forming a reddish swelling, which may be no larger than a small nutmeg, or quite as large as a pigeon's egg; it may bleed slightly, and causes in any case a great deal of pain. To return the bowel press up firmly by means of a sponge which has been wrung out in cold water. When the bowel has come down once it is always liable to do so again; care should therefore be exercised over the infant every time it has a motion. Efforts should be made to remove at once any tendency to constipation or diarrhœa. A cold sponge bath every morning will help to strengthen the child, and bathing the parts with cold water after the bowels have acted improves the muscular tone and serves as a preventative measure.

Thrush, also known as white mouth, is a peculiar form of inflammation of the lining membrane of the mouth, which frequently occurs in infants, more particularly in those reared by hand. The complaint is essentially preventable, and usually arises from a want of cleanliness. The signs of thrush are numerous, irregular, roundish white specks on the inner surfaces of the lips, gums, palate, and cheeks. Each little spot is surrounded by a deep reddish space, and is so tender as to cause great pain in swallowing, and the child experiences such difficulty in sucking that it refuses the breast or bottle. These symptoms are usually accompanied by a certain amount of redness and soreness between the legs.

The spots in thrush are really due to the growth of a minute vegetable fungus. The organism grows freely in milk which has undergone decomposition, and its development is probably promoted by a want of scrupulous cleanliness. The fungus will grow in the crevices of feeding-bottles and other utensils which have contained milk. The complaint is most likely to occur during the hot season.

Treatment. After a meal the child's mouth should be wiped out with warm water in which a pinch of carbonate of soda has been dissolved. The mouth should then be cleansed by means of a camel-hair brush or soft linen soaked in a mixture of borax and glycerine, or in Mellin's Glycaborate. When thrush has declared itself, all milk must be carefully boiled, and a few grains of bi-carbonate of soda or bi-carbonate of potash added to each meal. Where the symptoms are accompanied by vomiting, it may become necessary to substitute beef-tea or chicken-broth or barley water for milk. Absolute cleanliness must be enforced, and it is of the utmost importance that the feeding-bottle and teats should be thoroughly cleansed after use, and before each meal. Where the attack is persistent and the

condition of the child does not improve in two or three days, medical aid should be sought.

Croup. This disease is confined to young infants. The term is somewhat loosely employed by mothers and nurses to embrace a large group of symptoms occurring in young children. The symptoms which arise in croup are due to inflammatory changes which take place in the lining membrane of the windpipe. An attack of true croup usually begins like a common cold, with slight feverishness, hoarseness, drowsiness, and running at the eyes and nose. The best treatment is a hot bath, and to adopt every means to induce sickness by tickling the back of the throat with a small brush or feather, or by passing the finger into the back of the throat, or by the use of such simple emetics as salt water and mustard and water. Greater care should be exercised in the matter of food, times of feeding, and to the regular action of bowels. It is of very great importance that medical advice should be sought early, for prompt attention and careful treatment are very necessary. The disease is not infrequently followed by fatal results when neglected in its early stages.

What is known as "False Croup" usually begins at night, the child waking up and catching its breath, being apparently on the verge of choking. These symptoms are most likely to appear among badly-fed infants living in insanitary surroundings.

Child Crowing. These attacks are very similar in character to false croup, and are common during the teething period. An infant, apparently in perfect health, is seized with a spasm, and the breathing is for a time completely arrested. As the spasm passes off and respiration is renewed, the breath is drawn in with a crowing sound very like that produced in false croup. When an attack occurs, the child should be turned on its face. This plan will often cut short the spasm ; or a hot sponge on the throat, cold water dashed in the face,

and the free use of smelling salts must be resorted to. General preventative measures lie in the direction of improvement of the general health, exercise in the open air, wholesome easily digested food, and attention to the regular action of the bowels. A medical man should be consulted as soon as possible.

Infants in good Health have a soft smooth skin, clear eyes and red lips. The body is rounded and the bones well covered with flesh, but there is no excess of fat—the limbs feel firm, not flabby. The bowels of a healthy infant act at least once a day, the motions being soft, but not loose, and of a deep yellow colour. The greater part of its time is passed in quiet sleep. The weight steadily increases at the rate of at least a pound a month during the first year, and three-quarters of a pound a month the second year, so that at two years of age the weight should be about twenty-eight pounds. The gradual progressive increase in the weight is a good indication of health and normal development. Every infant should be weighed once a week, at the same time of day, during the first month, then every fortnight for three months, once in three weeks for the next three months, and once a month the rest of the first year, and every three months during the second year, when all is well, but more frequently if the child is ill, or appears out of sorts, or when the food seems to disagree. A small infant may be laid on a folded flannel or blanket and put on the pan of a pair of kitchen or shop scales—care must be taken to deduct the weight of the flannel or blanket, and if weighed in clothes to carefully weigh the clothes afterwards and deduct their weight.

Growing children should also be weighed regularly, and the weight of the clothes deducted, as recommended in the case of very young infants. Twice a year will be frequent enough if the child is in good health.

Malnutrition, Marasmus--Atrophy. Infants who have suffered from prolonged intestinal disorder or from the effects of a badly-arranged diet are usually most difficult to treat with promise of success.

The conditions ascribed to malnutrition and broadly described as marasmus or atrophy, are characterised by a cessation of normal growth in the entire organism, and infants so affected frequently present a state of progressive emaciation difficult to check.

The nutritional disturbances stand out so prominently that they are generally recognized as the most essential feature of such conditions. Successful treatment is therefore largely a question of diet so adjusted that a greater degree of assimilation may be assured. The correction of these conditions necessitate the selection of a food which will compensate for the loss which has taken place as the result of the complaint.

In the selection of a proper food it is to be borne in mind that infants afflicted with the disease in question generally show a marked inability to digest an appreciable amount of fat. Taking this into consideration in conjunction with the well-known fact that certain carbohydrates are more readily utilised in the body than others, to replace fat in the production of heat and energy, a starting point is given for selecting a diet which may be so adjusted that an improvement and an immediate gain in weight may be expected.

The most valuable carbohydrate for this purpose is maltose, for maltose is the most promptly assimilated of all the carbohydrates.

The predominating carbohydrate in Mellin's Food is maltose, and on this account it occupies a decidedly prominent place in the dietetic treatment of all cases of malnutrition, there being ample evidence of the value in such cases of the low-fat, high carbohydrate mixtures, directions for which are given in our book "Home Modification of Cow's Milk" under the title "Skimmed Milk."

We give below one mixture selected from several, and call attention to the balance of food constituents:—

| | |
|---------------|-------------------------|
| Mellin's Food | 4 level tablespoonfuls. |
| Skimmed Milk | 8 fluid ounces. |
| Water | 8 fluid ounces. |
| Analysis { | Fat49 |
| | Proteins.. .. 2.28 |
| | Carbohydrates .. 6.59 |

The amount of Mellin's Food may be increased to five or six level tablespoonfuls, giving a carbohydrate content of 7.54 and 8.48 respectively.

The above mixture may be used at first regardless of the age of the baby. After a few days the Mellin's Food should be increased to 5 and then 6 level tablespoonfuls, the proportions of skimmed milk and water remaining the same. As soon as the infant begins to gain weight, the formula should be modified and the mixture strengthened by substituting one-half ounce of skimmed milk for one-half ounce of water, continuing this change every week until the amount of skimmed milk is 12 ounces and the water 4 ounces. Six level tablespoonfuls of Mellin's Food to each pint of the mixture is usually sufficient, but this quantity may be increased in individual cases to meet the peculiarities of the conditions. The amount of the mixture to be given is to be regulated according to the age of the baby.

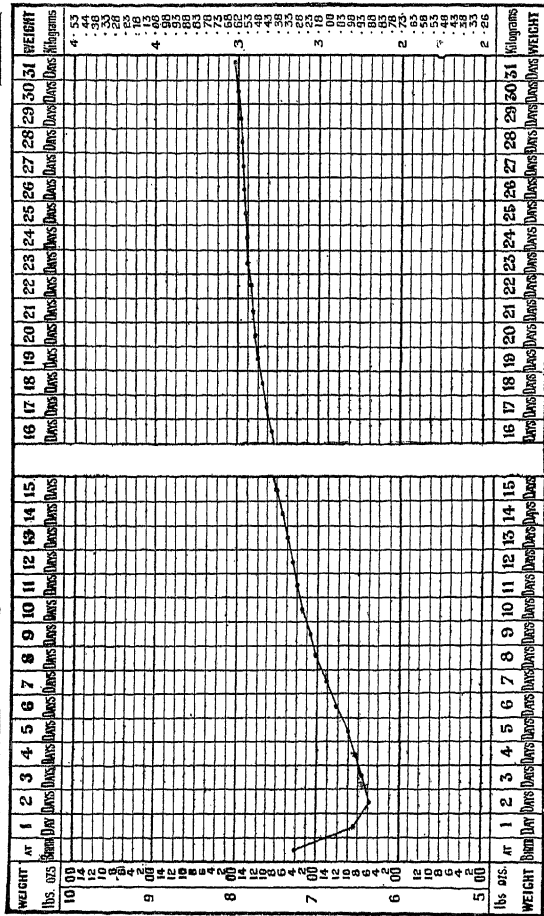
After the baby has made steady progress and shows a substantial gain in weight, and the general improvement is so marked as to indicate a condition approaching normal, a small amount of fat may be gradually added to the diet by removing less of the cream from the milk used in preparing the mixture, and at the same time the carbohydrates may be proportionately reduced. In this way, the infant may be gradually given as much fat as can be tolerated. It is, however, usually the case that these infants are rarely, if ever, able to digest as large a quantity of fat as a normal baby.

DAILY WEIGHT CHART.

NAME _____

FIRST MONTH'S NORMAL RECORD.

DATE OF BIRTH _____



Black Line represents normal course during First Month.

CHAPTER XIV.

WHAT TO DO IN EMERGENCIES.

In India, where the distances are often so great as to render it very difficult to obtain medical aid, it becomes important that nurses and mothers should know the course to be adopted in sudden emergencies, and accidents.

General Conduct in cases of Accident. In all cases of accident, the safety of the injured one depends largely upon the first steps taken by those around to afford relief. If from the following pages a mother learns how to act efficiently in such emergencies, she will have pleasing satisfaction in the knowledge which may enable her at any moment to soothe the suffering, alleviate the pain, and expedite the cure of her child, or to save the life of another.

It is necessary in all cases of accident to pay particular attention to the following points, in order that the treatment may be rewarded with the greatest success :—

1. Try to be collected, calm and decided ; and before adopting any mode of treatment make up your mind definitely as to what you intend to do. Having decided upon a course, carry out

your intentions calmly, firmly, and rapidly, paying no attention to modifications suggested by bystanders, which may cause delay and increase the sufferings of the injured one.

2. Lay the patient in a position which is the most comfortable—usually on the back, and so in a horizontal position ; but if a difficulty is experienced in breathing when so placed, then slightly raise the upper part of the body.
3. Loosen the clothes about the neck, chest, and waist.
4. If the body of the patient feels cold, cover it with blankets ; restore warmth by friction or other artificial means, unless the coldness is attended by copious bleeding.
5. Do not administer stimulants unless the patient is completely exhausted, or remains in a fainting condition for more than twenty minutes, and even then only give small quantities.

Treatment of small Cuts and Wounds which are not of sufficient importance to need the advice of a surgeon. Such injuries are often rendered very troublesome or even dangerous by unskilful treatment. Care should always be exercised, therefore, even in the treatment of slight cuts and simple wounds. The wound should be washed with a little warm water, if at hand, or cold water which has been boiled or filtered may be allowed freely to flow over it, the wound being afterwards wiped with clean linen, and then treated with iodine solution. Such a mode of treatment secures the removal of dirt or foreign matter. The cut edges should then be pressed firmly together, and held in their places by strips of plaster placed at right angles to the cut.

Where cuts are more serious it becomes necessary to modify the mode of treatment, according to the kind of vessel from which the blood is escaping. The blood

flows in the body through **three kinds of blood vessels**—namely, **arteries**, **veins**, and the very minute vessels which connect the smaller arterial branches with the small veins—the **capillaries**. The arteries are usually more deeply seated than the veins; in fact, most of the blood vessels which can be seen through the skin with the naked eye are veins. The blood contained by these three classes of vessels varies in colour; that present in the arteries is bright red or scarlet, and that of the veins dark red, whilst that which is found in the capillaries is intermediate in colour.

The differences in the manner in which the blood leaves the vessels, as well as its colour, enable one to determine the source whence it comes. The blood which issues **from a wounded artery** is of a bright red colour, and spurts forth in jets corresponding to the beats of the heart, whilst that **from a wounded vein** is much darker in colour, and flows in a continuous stream. In bleeding from the capillaries the blood oozes from the wound.

Bleeding may generally be stopped by pressure properly applied. Remembering that the blood flows *along veins towards the heart, and along the arteries away from the heart*, it becomes necessary to explain how and where the pressure should be applied in the case of the two kinds of vessels. Where bleeding is **from a wounded vein**, if direct pressure will not stop the flow of blood, a ligature should be passed round the limb, and made to tightly press on the side of the cut **remote from the heart**.

The blood from an **injured artery** is jerked or spurts out chiefly from the side of the wound which is nearer to the heart. If direct pressure will not check the bleeding, a tight ligature must be passed round the limb, and be made to press especially on the portion which is **nearer to the heart**.

When bleeding is taking place from the external surface of the body from any cause, try—

Direct Pressure on the Part, and raise the limb above the level of the body. If the wound is in the leg, let the patient be placed on the back and the leg raised. The pressure may be produced by any soft substance, such as a handkerchief, sponge, cotton-wool, or even the fingers.

If the above means are not attended with the desired effect, but the bleeding remains unchecked by simple pressure, it is necessary to **pass a tourniquet or ligature round the limb** as tightly as possible *immediately above* the point from which the blood issues. A medical man should then be sent for, or the patient carefully removed to the hospital or to some place where surgical aid may be obtained. The ligature above alluded to may be made with a pocket-handkerchief, strips of cloth, rope, twine, or india-rubber cord.

In Cases of Scalp Wounds, pressure can be made on the wound itself by means of some soft substance, such as a handkerchief, cotton-wool, or a piece of lint. If a pad is made of such a substance, and held pressed tightly down by the fingers, it will in most cases at once arrest the bleeding.

Bleeding from the Face and Jaws may generally be arrested in the same manner—that is, by using a pad to press the wounded part down upon the hard bones which are beneath.

When the Bleeding is from a Diseased Surface—abscess, ulcer, or such like—and direct pressure does not check the flow of blood, the wound should be bandaged tightly with styptic wool, which may be prepared by soaking

good cotton-wool in a strong solution of alum or tincture of steel, and allowing it to dry gradually. If no styptic wool is at hand, then ordinary wool or linen rag soaked in cold water, and made into a pad, should be tied tightly round over the wound.

Varicose Veins are a condition of the blood vessels which is due to the giving way of the little valves which normally regulate the flow of blood in these vessels—the weight of the column of blood, being uncontrolled, causing the veins so diseased to become dilated. When a varicose vein in the leg has burst, the limb should be raised higher than the rest of the body, and a handkerchief or other bandage should be tied tightly above and below the wound.

In cases where **blood flows from the nose** as the result of injury to some of its blood-vessels, cold water or ice should be applied. Some persons are very subject to bleeding from the nose, by which means it not unfrequently happens that they lose a very considerable quantity of blood ; in the case of growing children, and those suffering from debilitating diseases, this becomes a very serious matter, and means should at once be adopted to allay the flow of blood. In such cases the patient should be kept perfectly quiet on his or her back, cold being applied at the same time to the back of the neck, and a cold pad kept over the nose. If, however, such means fail to check the flow of blood, a piece of cotton-wool or styptic wool folded and tied to a piece of string should be introduced into the nose, and gently pressed upwards.

The Vomiting or Coughing up of Blood in considerable quantities are symptoms of grave importance, which are often present in ulceration

of the stomach and consumption in its many phases. In such cases the best plan is to keep the patient as quiet as possible; he should not be permitted to speak under any condition, but should be allowed to breathe fresh air freely, and ice or iced milk or water may be given. If the bleeding is very considerable, a cold wet towel may be applied to the chest, and if the blood flows from a broken vessel in the lungs, the patient should be allowed to inhale freely the vapour of turpentine mixed with steam. This may be prepared by mixing three tablespoonfuls of turpentine with about a quart of boiling water—the mixed steam and vapour given off by which may be inhaled by the patient.

In Cases of Bleeding, the patient frequently becomes weak and faint. This is not necessarily a dangerous or serious sign, for the faintness, which results in a quieted or reduced circulation, facilitates the staying of the bleeding, since, the rate of flow and pressure being reduced, the blood sooner coagulates and forms little plugs of clot, which naturally close the injured vessels and check the flow of blood. Of course, if the faint is prolonged and the bleeding does not diminish, it becomes necessary to adopt means to revive the patient.

Burns.—Burns are produced by flames and hot solid substances: they vary in severity according to the source of heat by which they are produced, and the length of time during which the injured part is exposed. They may vary in nature from a slight redness of the skin to complete charring and destruction of the skin and flesh.

Scalds are produced by hot fluids: those resulting from oil or milk are more severe, as a rule, than those produced by water. The danger which attends this class of injuries varies with the part and the extent of

the body involved; for example, even slight burns or scalds which involve a large surface are generally more serious than severe burns, which only affect a more limited area. Where the burn or scald is slight, and *there is no actual wound*, the part may be bathed with, or soaked in, a strong tepid solution of washing soda.

The means that may be taken to relieve the suffering in the case of this class of injuries are:—

Firstly, is to exclude the air as quickly as possible by **pouring over the injured part some linseed or sweet oil.**

Secondly, **carefully remove all clothing** in contact with the part. If this cannot be easily done, the garments should be freely cut, in order that the pain and suffering may not be increased unnecessarily by dragging the clothes over the injured part. The oil may be poured upon or between the clothes and the body, if the burn is severe, for the oil softens the cloth and facilitates the removal of the clothes, thereby reducing the chances of tearing away the skin.

Thirdly, **soak some cotton wool or lint** in linseed or pure sweet oil, and apply it to the injured part, renewing the application from time to time. Carron oil, which consists of equal parts of limewater and linseed oil, is one of the best remedies which can be utilised. The oil employed may be either linseed, olive, or almond oil—never any mineral oil, such as paraffin or naphtha.

Owing to the inflammable nature of clothing in India, especially that worn by women and young children, the catching fire of their garments is attended with the very greatest danger. In no case of accident is there greater need for presence of mind and coolness. Remember that air is necessary for combustion; therefore, if a person's clothes take fire, means should immediately be adopted to cut off the supply of air.

This object may be attained by enveloping the person in a cloak, rug, blanket, or similar article. People should remember that if a person on fire runs, the consequences will probably prove fatal; a person whose clothes catch fire should throw himself down and roll over and over. Remember that persons who have been scalded or burnt suffer much from shock, and need relief from this; after attention has first been paid to the injured parts, therefore, apply warm coverings and give warm stimulating drinks.

Treatment of Bites. *Bites* of animals with sharp teeth, such as cats, dogs and fishes, may produce one or more punctured or incised wounds, or tear the flesh and produce a lacerated wound, or they may simply cause abrasions of the skin. The mode of treatment to be recommended will, of course, vary with the nature of the injury, but in all cases immediate antiseptic treatment is to be recommended, for an animal's mouth is so apt to contain septic matter. Where the pain is severe, hot fomentations or poultices are most soothing.

Hydrophobia. A great deal of misapprehension exists as to the danger incurred by the bites of dogs, and it therefore will not be out of place to remark that there is no fear that hydrophobia will ensue unless the dog is affected with the disease. The following notice with respect to the subject of hydrophobia has been issued by the Brown Institution:—

“This disease occurs in dogs of all ages, and may appear at any season of the year. It is recognised by a change of demeanour of the dog, which becomes dejected, morose, inclined to roam, and anxious to hide itself. The animal gnaws at wood, stones, or any refuse which it sees, snaps at imaginary objects, and becomes unusually excited by strange or sudden noises. It rubs its throat with its paws, as if striving to get rid of some object lodged there; at the same time there is a more or less abundant flow of saliva

from the mouth. The animal is, moreover, very readily excited, and barks with a peculiar, harsh, strange cough. The dog will attack its master or animals of any kind; but it is most easily roused to fury by the presence of other dogs. It is feared and shunned by healthy dogs—not only when it attacks them, but when the disease is in a very early stage. There is throughout the disease no dread of water. Before the tendency to bite shows itself the animal may be unusually affectionate to his master—licking his face and fawning upon him. In one form of the disease, called ‘dumb madness,’ there is a paralysis of the jaw, and therefore inability to bite. If a dog has shown any of the symptoms of madness mentioned above, or an unusual tendency to bite other animals, it should be at once loose-muzzled and securely chained up, but it is advisable that it should not be destroyed until it has been examined by some authority capable of determining whether the animal be rabid or not. Owners of dogs are warned of the danger they may incur by allowing their faces and hands (especially if scratched) to be licked by these animals, even if the latter show no sign of madness.”

When a person is bitten by an Animal. If the wound be in a limb tie the part above the wound *i.e.*, on the side of the wound which is nearer to the heart, and take immediate steps to encourage it to bleed freely. In all cases while first aid is being given it is best to send for medical assistance for it is often of the utmost importance that this should be rendered with as little delay as possible.

Stings. The pain caused by the stings of wasps, bees, hornets, mosquitoes, etc., may be lessened by a few simple precautions. The sting, when left in the wound by the insect, should be first carefully extracted, and it is a good plan to then press the barrel of a key firmly

round the part. This precaution will prevent the irritating poison from spreading. As the poison is mostly of an acid nature, the application of a little alkali, such as hartshorn, to the injured part, will produce immediate relief. Common soda will answer very well ; and in many cases application of soap, oil, or glycerine to the injured surface is useful.

Bruises and Sprains. When a part of the body is *bruised*, after a time it becomes swollen and discoloured, assuming a blue or blackish tint. Where the skin is not broken, the discoloration may not be seen at first, but in the course of a few days the surrounding skin becomes yellow or red and blue. The discoloration and swelling are due to the escape of blood into the surrounding tissues ; the part should, therefore, be kept at rest, and cold compresses should be applied. Where possible, the injured part should be bathed and kept cool by the application of very cold water. A piece of ice wrapped in linen and made into a cold pad is of great service. In cases where a bruise is associated with abrasion of the skin, it is a good plan to first thoroughly cleanse and then apply a little *vaseline* to the wounded surface, and then to place the cold pad or ice in position. The tendency to discoloration may be very materially reduced by attending at once to one of the last-named modes of treatment.

The Sprains of Muscles or Joints are often exceedingly troublesome injuries to recover from. They require, in the first place, absolute rest for the part injured. The application of heat gives the greatest ease, therefore the part should be bathed with hot water. The addition of some sea-salt to the water will increase its usefulness.

Some prefer to adopt the "cold water cure." The object then is to keep down the temperature of the injured part by the repeated application of cold water. When the swelling is passing off, the part should be rubbed and carefully exercised. Too prolonged rest is not advisable, as stiffness follows.

Fainting Fits and sudden illness. When a person becomes insensible through *faintness*, it is necessary to decide at once what means to take for his or her recovery. A man may suddenly drop from apoplexy, epilepsy or weakness of heart. The treatment to be given in these cases is not identical: However on general lines the treatment will be as follows :—

1. *Lay the person flat on the back, without a pillow for the head; in fact, if it can be arranged, it is better for the head to be lower than the rest of the body, save in the case of an apoplectic fit.*
2. *Loosen all tight parts of the dress, especially about the neck, chest, and waist.*
3. *If in a close, heated room, church, theatre, etc., remove the patient to the fresh air at once.*
4. *Smelling salts or spirits of hartshorn should be held near the nostrils.*
5. *Cold water should be sprinkled over the face; and should the patient not recover, cold water may be applied to the chest. A towel dipped in cold water will answer for this purpose very well.*
6. *On the return of consciousness, if the patient is weak, administer stimulants in small doses.*

When the fit is accompanied by restlessness or convulsions, cold should be applied to the head, and the patient should be restrained, and if consciousness does not soon return, medical advice should be obtained. It not unfrequently happens that well-intentioned people try to force liquids into the mouths of those suffering from convulsions; it is, therefore, well to remember that this practice is attended with the greatest danger.

Convulsions in Children call for great promptitude on the part of those at hand. If the child is fairly strong it should be placed in a warm bath, and the head should be kept cold by a piece of linen or flannel soaked

in cold water. If the child is weak, then a blanket bath should be administered instead of the warm-water bath.

Sunstroke and Heatstroke are, unfortunately, very common in India. While the former usually comes on quite suddenly when a person is exposed to the direct rays of the sun, the latter may be produced at night during the very hot season of the year. When due care is taken to cover the head and back of the neck by means of a turban or sun-hat the liability to sunstroke is reduced to a minimum. Against the causes which tend to produce heatstroke, however, the preventative measures are not so simple. The matters to be attended to are good ventilation of bedrooms and avoidance of overcrowding. Abstinence from all alcoholic liquors is a great safeguard against heat or sunstroke, and a good rule is to avoid sleep immediately after a meal.

When symptoms of sunstroke or heatstroke occur—

1. Carry the patient to a cool, shaded place, or dark room.
2. Remove the clothes at once, and lay the patient in a horizontal position, with the head and shoulders somewhat raised above the level of the body.
3. Pour cold water over the head, chest, and spine, till the patient begins to revive, or until medical aid is obtained.
4. Allow the patient to remain as quiet as possible.

Poisoning. Where a child or adult has taken poison either wilfully or accidentally, it is usually difficult to discover at once the nature of the poison. It is practically impossible in this small work to give precise details of the symptoms which are indicative of different forms of poisoning, but at the same time some general rules may be laid down which should serve as a safe guide in an emergency.

It is first necessary to decide whether it is probable that any case of sudden illness is one of poisoning or not ; and the following points should guide one to rapidly form a conclusion :—

1. In a real case of poisoning the symptoms appear suddenly. Such is rarely the case in diseases, save **apoplexy**, **sunstroke**, and **cholera**. It therefore follows that when a person is suddenly seized with any of the following symptoms—vomiting, purging, delirium, or insensibility—it is highly probable that poison has been introduced into the body.
2. The symptoms make their appearance after food or drink has been taken.
3. Several persons who have partaken of the same food or drink will develop similar symptoms. Cholera is the only disease which is likely to affect several previously healthy people at the same time.

Classes of Poisons. Having decided that a person has been poisoned, the next point is to determine as far as possible the nature of the poison ; for the course to be adopted in order to afford relief must be varied with the nature of the poison. For convenience, all common poisons may be divided into three classes :—

- (a) Those which act upon the nervous system are known as **neurotics**.
- (b) Those known as **corrosives** possess burning properties, and in consequence destroy more or less the membranes of the mouth and throat.
- (c) Those which act as **irritants** produce inflammation.

The Neurotic Poisons usually contain opium in some form or other, strychnine, chloral or camphor. The symptoms are usually drowsiness and deep sleep.

Some give rise to noisy delirium (belladonna), while others produce cramp and convulsions (strychnine, nuxvomica, arsenic). Usually the pupils of the eyes become very much contracted, the breathing becomes noisy, and the skin warm. Vomiting rarely occurs without the administration of an emetic.

Treatment.—As soon as possible administer an emetic such as may be prepared by mixing one ounce of common table salt with six ounces of warm water. This should be given every quarter of an hour until vomiting occurs. A better emetic for adults is prepared by mixing about a quarter of an ounce of powdered mustard to six ounces of water. A still better emetic may be prepared from sulphate of zinc in doses of twenty to forty grains every quarter of an hour, or sulphate of copper dissolved in water in five to ten-grain doses. Since the tendency of poisons of this class is to induce sleep, every effort should be made to keep the patient awake by giving drinks of strong coffee, and by walking exercise; and cold water should be dashed over the face and neck. In extreme cases, artificial respiration (*see pp. 112-113*) must be resorted to, and kept up for several hours. It is advisable to administer a purgative some hours after vomiting has been induced.

Carbolic Acid. Where this substance has been taken, the inside of the mouth becomes shrivelled and white. The odour may be detected in the breath. The skin and eyelids become cold and clammy.

Treatment. A couple or three teaspoonfuls of Epsom salts followed by an emetic of mustard; more Epsom salts at intervals, followed by a mixture of olive and castor oil and white of egg in water.

The Corrosive Poisons include all those which tend to destroy the lining membrane of the mouth and alimentary canal. Their action is distinguished at once from all other poisons by the fact that they cause acute pain. Poisons of this class are often called acid

poisons; they include not only strong acids, but alkalies, and also certain metallic substances.

The Acids which are most frequently met with are:—the mineral acids, hydrochloric or muriatic, sulphuric or oil of vitriol, nitric or aqua fortis and oxalic acid.

The Alkalies which commonly give rise to cases of poisoning are caustic soda and fluid ammonia.

The Metallic Substances are such bodies as corrosive sublimate, lunar caustic, and chloride of zinc.

Treatment. A person who has taken a poison belonging to either of these classes usually complains of burning pains in the throat and stomach, accompanied by vomiting and purging. The abdomen swells and collapse soon comes on. **Emetics should not as a rule be administered**, but olive or linseed oil or egg should at once be given.

Where the substance is a mineral acid or oxalic acid, give chalk or magnesia mixed with water or lime water or saccharinated solution of lime. In cases where alkalies have been swallowed, some mild acid should be given, such as acetic acid (vinegar), or the juice of lemons.

The Irritant Poisons, which produce excitement and delirium, usually cause a peculiar burning taste, and give rise to thirst, constriction of the throat, and pain in the stomach. In India the best known poisons of this class are croton oil, cantharides, antimony and arsenic. The symptoms vary with the amount, the kind of material, and the individual; but usually they take the form of excitement, and convulsions sometimes occur, followed by sleep and delirium, insensibility and death.

Treatment should be the same as in the cases of neurotic poisoning. The first point to be attended to in both cases is to rid the stomach of the objectionable matter by the action of an emetic, and then to administer

some soothing drink, such as raw egg or egg and milk. When recovering, the patient needs stimulant, such as strong tea or coffee.

General Rules in cases of Poisoning. The following should be remembered and acted upon :—

1. When a person who has swallowed a poison seems likely to go to sleep as a result of the action of the poison, keep him awake *at all costs*.
2. Should he exhibit a tendency to go off into a fit, throw cold water into his face.
3. When there are no stains about the mouth, nor burning of the skin, give an emetic at once, followed by eggs, milk, linseed or salad, but **not almond oil**, and then strong tea or coffee.
4. In cases where there are stains about the mouth and burning of the skin do not give an emetic, but oil at once, followed by milk, or raw egg and flour beaten up with water.
5. Where phosphorus is the poison suspected **do not give oil**, but frequent doses of magnesia and water may be administered.
6. Never hastily regard a case as hopeless, but prove it. In all ordinary cases take means to empty the stomach by means of an emetic.
7. Continue your efforts to restore the patient and to give relief, even if at first they appear unavailing. It may be necessary to continue to work for several hours before an improvement is observable.
8. Carefully watch the patient even when apparently quite recovered, for the symptoms often re-appear after a time.
9. When sending for medical aid, give the doctor all the particulars possible, in order that he

may provide himself with remedies best suited to meet the case. Bear in mind the importance of expedition.

Common Emetics and Antidotes. In cases where other emetics are not readily obtainable, two tablespoonfuls of mustard mixed in a pint of warm water should be rapidly prepared and given to the patient. As stated above, where a corrosive poison has been taken great care must be exercised in the administration of an emetic, and in most cases a soothing mechanical antidote only should be given. It is also a safe plan in most cases to give large draughts of warm milk, or water mixed with salad oil, or water mixed with white of egg and salad oil, or butter. Where medical advice is unobtainable at once, then the following antidotes should be employed:—

| <i>Poisons.</i> | <i>Treatment.</i> |
|-----------------------|--|
| Strychnine | Emetic of Mustard aided by warm water. |
| Tincture Nux Vomica } | |
| Arsenic | Emetic of mustard and salt at once. After vomiting, give salad oil. |
| White Precipitate . | |
| Copperas | Milk, Cream or Butter. |
| Blue Vitriol | |
| Sugar of Lead . | Milk or white of eggs or a mixture of these in large quantities. |
| Sulphate of Zinc . | |
| Corrosive Sublimate. | |
| Red Precipitate . | |
| Vermilion | |
| Tartar Emetic . | Warm water at first, to stimulate vomiting, and then to check the vomiting give a grain of opium in water. |
| Antimonial Wine . | |
| Quick Lime | Water should be freely given, to which lemon juice or vinegar has been added |
| Caustic Soda | |
| Caustic Potash . | |
| Spirit of Hartshorn . | |
| Fluid Ammonia . | |

| | |
|--------------------|---|
| Oxalic Acid ... | Give soap or magnesia or chalk, mixed with water, every two minutes. |
| Oil of Vitriol ... | |
| Muriatic Acid... | |
| Aqua Fortis ... | |
| Carbolic Acid... | Give flour and water or glutinous drinks. |
| Chloroform ... | |
| Ether | Pour cold water over head, face and neck. Induce artificial respiration by the method explained upon pp. 112-113. |
| Chloral Hydrate | |
| Laudanum ... | Strong coffee followed by ground mustard in warm water to stimulate vomiting. Administer strong coffee again. Keep the patient in motion. |
| Morphine ... | |
| Opium ... | |

Antidotes are substances which are either given in order to combine with and neutralize the poisonous material by converting it into a harmless substance, or bodies which have some counteracting influence upon the body as a whole, or the nervous system in particular, and thus correct the influences of the poison. As examples of the former group :— *Chemical Antidotes*. The antidote for oxalic acid and the mineral acids is chalk or magnesia and for arsenic is dialysed iron or magnesia, and for tartaremetic is tannin. Examples of bodies which act in the latter way :— *Physiological Antidotes* we have in the opium which, after an emetic, is given in cases of poisoning by belladonna ; and chloral, after emetics, in strychnine poisoning.

Toxins are highly active poisons resulting from the decompositions of animal or vegetable matter brought about by germ growth.

Ptomaine Poisoning.—Poisons causing auto-intoxication. They are generally chemical substances produced by the action of putrefactive bacteria in food stuffs, and may be either originally existing in food or formed during the process of digestion. All the ptomaines are not poisonous, but every year a number of persons suffer more or less

acutely from poisoning by these bodies. The foods most prone to set up toxin poisoning are all kinds of flesh and fish food which are not quite fresh, or which are in any way tainted: ice cream, canned foods of all kinds, potted foods, sausages, decomposed cheese, or condensed milk. Tinned goods should be removed from the receptacle as soon as opened.

Symptoms. These vary considerably, but generally some or all of the following indications may be observed. There is severe gastric disturbance accompanied by colic, griping, vomiting, etc. The symptoms follow the partaking of the poisonous food at some short interval of time. Occasionally the attack is extremely sudden, or it may arise a considerable time after a meal. There may be rigor, prostration giddiness, accompanied by offensive diarrhœa, muscular twitchings, drowsiness, nearly always, delatation of the pupil, irritability of the skin, coma.

Treatment in Toxin Poisoning.—In all cases of toxin poisoning medical aid should be sought as early as possible. Whilst awaiting the arrival of a medical man, every endeavour must be made to counteract the poison by administering one of the antidotes mentioned below. Keep patient awake. Apply hot compress to the abdomen to relieve pain. Administer a purgative if necessary. Give a small amount of stimulant if prostration is very severe.

Antidotes in Toxin Poisoning.—Permanganate of potash in three grain doses for adults. Formaldehyde, charcoal, eucalyptus oil.

Stimulants or carminatives are useful to counteract the prostration following the attack.

Foreign bodies in the eyes, nose, and ear. It not unfrequently happens that particles of dust, pieces of stone or metal, insects, etc., lodge under the eyelids, and give rise to much irritation. Any of the above may usually be removed with the folded corner of a silk handkerchief or a moistened camel hair brush. If much dust has passed under the eyelid it may generally be removed by carefully syringing with warm water. After the removal of the irritating substance,

if the eye continues to be painful, it is a good plan to drop between the lids a little castor oil or olive oil. If the pain still continues, a cold, wet compress should be applied. Quicklime, pieces of mortar, or other matters which are likely to irritate and burn, sometimes find their way under the eyelid. They should be removed as speedily as possible, and the eye should be bathed with warm water and oil dropped between the lids.

Flies and insects sometimes find their way into the ears. Occasionally children introduce into the tube of the ear bodies similar to those passed into the nose. The ear should, in such cases, be syringed out with warm water. Not however when peas or other seeds are suspected for water would cause them to swell and fail to dislodge them. The nozzle of the syringe should not be introduced within the ear but should be held just outside the opening, and a little glycerine or oil dropped into the passage; but if the body is a solid, like a bead or piece of pencil, and it is not washed out by the syringing, then medical aid should be called in. The inexperienced should not try to remove the foreign body except by syringing, for efforts in this direction may result in injury to the delicate drum of the ear.

Restoring the Apparently Dead. The following system is recommended by the Royal Humane Society.

If from drowning, suffocation, or narcotic poisoning, send for medical assistance, blankets, and dry clothing, but proceed to treat the patient instantly.

The points to be aimed at are—first, and immediately, the restoration of breathing; and *secondly*, after breathing is restored, the promotion of warmth and circulation.

The efforts to restore life must be persevered in until the arrival of medical assistance, or until the pulse and breathing have ceased for an hour.

RULE 1.—*To adjust the Patient's Position.* Place the patient on his back on a flat surface, inclined a little from the feet upwards; raise and support the head and shoulders on a small firm cushion or folded article of dress placed under the shoulder-blades. Remove all tight clothing about the neck and chest.

RULE 2.—*To maintain a Free Entrance of Air into the Windpipe.* Cleanse the mouth and nostrils; open the mouth; draw forward the patient's tongue, and keep it forward: an elastic band over the tongue and under the chin will answer this purpose.

RULE 3.—*To imitate the Movements of Breathing.*

First.—Induce Inspiration. Place yourself at the head of the patient, grasp his arms, raise them upwards by the sides of the head, stretch them steadily but gently upwards for two seconds. [*By this means fresh air is drawn into the lungs by raising the ribs.*]

Secondly.—Induce Expiration. Immediately turn down the patient's arms, and press them firmly but gently downwards against the sides of his chest, for two seconds. [*By this means foul air is expelled from the lungs by depressing the ribs.*]

Thirdly.—Continue these movements. Repeat these measures alternately, deliberately, and perseveringly, fifteen times in a minute, until a spontaneous effort to respire be perceived.

When a spontaneous effort to respire be perceived, cease to imitate the movements of breathing, and proceed to induce circulation and warmth (*as below*).

RULE 4.—*To excite Respiration.* During the employment of the above method excite the nostrils with snuff or smelling salts, or tickle the throat with a feather. Rub the chest and face briskly, and dash cold and hot water alternately on them. Friction of the limbs and body with dry flannel or cloths should be had recourse to. When there is proof of returning respiration, the individual may be placed in a warm bath, the movements of the arms above described being continued until respiration is fully restored. Raise the body in twenty seconds to a sitting position, dash cold water against the chest and face, and pass ammonia under the nose. Should a galvanic apparatus be at hand, apply the sponges to the region of the diaphragm and heart.

Treatment after Natural Breathing has been Restored. *To induce circulation and warmth.* Wrap the patient in dry blankets, and rub the limbs upwards energetically. Promote the warmth of the body by hot flannels, bottles or bladders of hot water, and heated bricks, applied to the pit of the stomach, the armpits, and to the soles of the feet.

On the restoration of life, when the power of swallowing has returned, a teaspoonful of warm water, small quantities of wine, warm brandy and water, or coffee should be given. The patient should be kept in bed, and a disposition to sleep encouraged. During reaction large mustard plasters to the chest and below the shoulders will greatly relieve the distressed breathing.

If from intense Cold. Rub the body with snow, ice, or cold water. Restore warmth by slow degrees. It is highly dangerous to apply heat too early.

If from Intoxication. Lay the individual on his side on a bed, with his head raised. The patient should be induced to vomit. Stimulants should be avoided.

If from Apoplexy or from Sunstroke. Cold should be applied to the head, which should be kept well raised. Clothing removed from the neck and chest. Stimulants avoided.

Appearances which generally indicate Death. There is no breathing or heart's action; the eyelids are generally half-closed; the pupils dilated; the jaws clenched; the fingers semi-contracted; the tongue appearing between the teeth, and the mouth and nostrils covered with a frothy mucus. Coldness and pallor of surface increases.

The treatment recommended by the Society is to be persevered in for three or four hours. It is an erroneous opinion that persons are beyond recovery because signs of vitality do not soon make their appearance, as cases have come under the notice of the Society of a successful result even after five hours' perseverance.

CHAPTER XV.

THE INFECTIOUS DISEASES OF CHILDHOOD.

Infectious Diseases are due to the growth of small living organisms, commonly known as germs or microbes, which are so extremely minute that they can only be seen by means of the most powerful microscopes. Infection means communicating a disease from one person to another. Each disease has its own special germ which gives rise to the disease; *e.g.*, typhoid germs produce typhoid. Each kind of germ reproduces its own kind, generally by dividing again and again, and thus producing new organisms. This division, or multiplication, goes on very rapidly, so that one fever germ will produce seventeen thousand or more of its kind in twenty-four hours. The various symptoms of infectious diseases result from the growth of these organisms in the blood and tissues of the body. These microbes of disease are then thrown off from the body, sometimes in the breath or from the skin, or in

the excretions, and so they may infect other people directly, or they may be carried by air, water, clothes, flies, cats or dogs, and so be breathed in or swallowed by people at a distance.

When disease-producing living dust is introduced into the body, either with the air breathed or with the liquid or food swallowed, if the conditions are favourable the microbes rapidly grow and multiply, and so change the blood and other fluids that diseases are set up. During the growth of these disease germs poisonous bodies are also produced, to which some of the symptoms of the complaint are due. So far as children are concerned, the most common means by which disease germs are introduced into the system are water and milk. Among the diseases which may be conveyed by *milk* are diphtheria, typhoid fever, tuberculosis, and scarlet fever.

The course of an infectious fever is divided into the following states or periods :—

1. *Incubation, or Sickenings*.—An interval between the disease being “caught” and the appearance of definite signs. There may be an indefinite feeling of uneasiness, loss of vigour, etc., but sometimes there are no signs of illness.

2. *Invasion*.—The increasing multiplication of the germs and particularly the products of their activity now poison the whole system. This stage is often ushered in by a shivering fit. It is marked by a rise of temperature. In this stage the rash (if any) appears. The invasion stage runs a definite course of days or weeks, according to the disease.

3. *Defervescence, or Decline*.—The period of returning to normal temperature. This may be by *crisis*, a sudden improvement, but more generally by *lysis*, a gradual improvement. In this stage great care is necessary to avoid “relapse” and complications.

Common Infectious Diseases of Childhood.

The common ailments, such as whooping cough, measles and scarlet fever, which are looked upon in England as essentially infantile complaints, and from one or more of which so few children escape in cold countries, are either unknown or contracted in such a mild form in the tropics that they are not usually to be considered serious. It will, however, often relieve a mother's anxiety to know how long after a child has been exposed to an infectious disease there is danger that the disease has been contracted. The following table gives the period of incubation, the time during which the child is sickening for the disease, and the other information concerning these complaints:—

| Disease. | Symptoms usually appear | Anxious period extends from | Period of Infectivity. |
|-------------------|-------------------------|-----------------------------|--|
| Whooping Cough* | Within 14 days | 7-14 days | Six weeks from beginning to whoop. |
| Scarlet Fever ... | „ 4 „ | 1-7 „ | Until scaling has ceased. |
| Measles† ... | „ 14 „ | 10-14 „ | Until scaling and cough have ceased. |
| Typhoid Fever ... | „ 11 „ | 1-28 „ | Until diarrhoea ceases. |
| Mumps ... | „ 10-22 „ | 16-24 „ | Fourteen days from commencement. |
| Diphtheria ... | „ 2 „ | 2-5 „ | Fourteen days after disappearance of membrane. |
| Chicken-pox ... | „ 14 „ | 10-18 „ | } Until all scabs have fallen off. |
| Small-pox ... | „ 12-17 „ | 1-14 „ | |

* In whooping cough the patient is infectious during the early stages of the primary cough, which may be three days before the whooping begins.

† In measles the patient is infectious three days before the eruption appears.

Symptoms of Infectious Diseases of Childhood.

Where medical aid is not readily available, the following table may aid a mother in determining any one of the diseases mentioned :—

| Disease. | Nature of Eruption or Symptoms. | Appearance. | Duration. |
|-------------------|--|---|--------------------------|
| Whooping Cough | Catarrh, sneezing, watering of the eyes, feverishness and cough. | 10 to 14 days. | 4 to 7 weeks, or longer. |
| Scarlet Fever ... | Bright scarlet, diffused. | 2nd day of fever, or after 24 hours' illness. | 8-19 days. |
| Measles | Small red dots, like flea-bites. | 4th day of fever, or after 72 hours' illness. | 6-10 days. |
| Typhoid Fever... | Rose-coloured spots, scattered. | 7th to 14th day. | 22-30 days. |
| Mumps | Fatigue, feverishness, sore throat, swelling of the face. | 2nd to 3rd week. | 21 days. |
| Chicken-pox ... | Small rose-pimples, changing to vesicles. | 2nd day of fever, or after 24 hours' illness. | 6-7 days. |
| Small-pox ... | Small red-pimples, changing to vesicles, then pustules. | 3rd day of fever, or after 48 hours' illness. | 14-21 days. |

Prevention of the Spread of Infectious Diseases.

When small-pox, cholera, diphtheria, measles, typhoid or scarlet fever has broken out in a house, the first thought should be to prevent its spread.

1. Separate the sick, without delay, from the rest of the household, by removal where possible, or by complete isolation, with a sheet well wetted with disinfectant hung outside the bedroom door.

2. The room selected should be airy, and where possible, in the hill districts, the one selected should have a fireplace.

3. Remove at once all furniture that can be spared, and anything that may harbour dust, dirt, or infection.

4. Give strict orders that no communication be held with the sick room, except through the nurse or some authorised person who has had the disease.

5. Examine house-drains and water-closets, where such exist, or other sanitary appliances, sinks, dustbins, and any possible sources of nuisance; remedy defects and disinfect freely. In times of epidemic, the sewers should be disinfected, and all arrangements for the reception, removal or disposal of excreta should be inspected and disinfected.

6. Look to sources of water supply, house cisterns, water-butts, pumps, wells, and all utensils employed for the collection or storage of drinking water for impurities and contamination by sewage. Water which is clear and pleasant to the taste may still be charged with sewer poison. See that all drinking and cooking water is boiled before use.

7. Children living in an infected dwelling should not attend schools or visit other houses, and should not travel by rail, steamer or public conveyances.

8. Persons recovering from scarlatina should on no account be allowed to mix with their fellows until several baths have been taken and the peeling is completed.

9. The bodies of persons who have died of fever are infectious, and should be carefully and immediately isolated. They should be buried or cremated with the least possible delay.

10. *In the sick-room*, nothing can replace *fresh air, light, and cleanliness*. Scents are useless.

11. Remove all superfluous furniture, carpet, curtains, hangings, etc., set everything in order, and clean up. If the room is not isolated, hang a sheet before the door outside, and keep well wetted three or four times daily with Condyl's Fluid or Carbolic Acid. Avoid stuff dresses.

12. Keep within reach a basin with Condyl's Fluid to spit into; and where there is no fire to burn them, a large basin containing disinfectant to receive the squares of rag used in place of handkerchiefs.

13. *Disinfectants are Poisons.* Bottles containing them must be put away, and not allowed to stand with ordinary medicine bottles.

14. Disinfect and remove as soon as possible all discharges from the body of the sick. Pour disinfectant freely over excreta and down sinks.

15. No food should be kept in the sick room and all feeding vessels should be instantly and thoroughly cleansed with boiling water.

16. In scarlatina, oil the body when the skin is peeling, twice daily, and use warm baths with soap.

17. When sickness is come to an end, disinfect the room and all that has been in contact with the invalid.

CHAPTER XVI.

SIMPLE FOODS FOR CHILDREN AND INVALIDS IN INDIA.

1.—MILK AND MELLIN'S FOOD.

Ingredients :—Mellin's Food, two heaping tablespoonfuls.
Hot Water, two tablespoonfuls.
Milk, sufficient to make a pint.

To prepare—

Place the Mellin's Food in a jug, add a tablespoonful of hot (not boiling) water, and stir the whole into a paste ; then add the rest of the hot water and stir again ; next add the milk, with constant stirring.

2.—BREAD AND MILK.

Ingredients :—One thick slice of bread.
Half a pint of milk.
Mellin's Food to taste.

To prepare—

Cut the bread into cubes ; place the same in a small basin ; pour on boiling milk ; allow to stand for a few minutes covered ; sprinkle Mellin's Food and a little salt over when served.

3.—MELLIN'S BISCUITS AND MILK.

Ingredients :—Milk, one half pint.
Six or eight Mellin's Food Biscuits.

To prepare—

Bring the milk to scalding point, about 140° F., place the Biscuits in a breakfast cup or small basin and pour over them sufficient of the hot milk to cover them (about five tablespoonfuls). Allow them to stand six minutes, then with a spoon mix the softened Biscuits into a smooth paste, and finally add the remainder of the milk.

4.—MILK AND EGG WITH MELLIN'S FOOD.

Ingredients :—Two eggs.
One tablespoonful of Mellin's Food.
One pint of milk.

To prepare—

Beat the eggs well, turn on to the Mellin's Food previously dissolved in a little warm water, mix thoroughly and add the milk.

5.—WHITE OF EGG AND MILK.

Ingredients :—The white of two eggs.
Two tablespoonfuls of milk.
One dessertspoonful of Mellin's Food.

To prepare—

Boil the milk and let it cool; whip the white of the eggs and put into a tumbler; dissolve the Mellin's Food in a little warm water; add this to the milk, then add the whole to the beaten eggs and stir.

6.—BLANC-MANGE (CORNFLOUR).

Ingredients :—One-fourth teacup of cornflour.
 One pint of milk.
 One dessertspoonful of sugar.
 Two tablespoonfuls of Mellin's Food.

To prepare—

Add sufficient milk to the cornflour to produce a smooth paste; put the remainder of the milk on to boil; pour the boiling milk on to the cornflour paste; return the whole to the saucepan and boil gently with constant stirring for ten minutes; after well boiling remove from the saucepan, add the sugar and Mellin's Food, and stir again well for a few seconds; pour into a mould previously rinsed with cold water.

7.—BLANC-MANGE (RICE).

Ingredients :—Half-a-teacupful of ground rice.
 One pint of milk.
 One dessertspoonful of sugar.
 Two tablespoonfuls of Mellin's Food.
 A strip of fresh lemond rind.

To prepare—

Follow the directions given above for Cornflour Blanc-Mange. It should be remembered that cornflour and rice must be very thoroughly boiled in order to cook the starch and render it digestible. A little Mellin's Food may be sprinkled over the Blanc-Mange when served.

8.—BLANC-MANGE (IRISH MOSS).

Ingredients:—One-fourth teacup of Irish or Iceland Moss.
 One pint of milk.
 A pinch of salt.

To prepare—

Soak the moss in cold water a few minutes, then pick it over carefully and wash. Tie in a muslin bag, put with the milk into a double boiler and boil until the milk thickens when dropped on a cold plate. Add the salt and take out the bag, first pressing it gently ; then turn the thickened milk into a mould. Eat with sugar and cream and Mellin's Food.

9.—PLAIN JUNKET. (This is sometimes called "curds and whey.")

Ingredients :—Half-a-pint of good milk.
 Rennet.

To prepare—

Take one half-pint of raw milk and heat it lukewarm ; then add a teaspoonful of essence of pepsin or liquid rennet and stir the mixture thoroughly ; pour into custard cups and let it stand until firmly curdled.

10.—CUSTARD WITH MELLIN'S FOOD.

Ingredients :—One half-pint of milk.
 Two eggs.
 One dessertspoonful of sugar.
 One dessertspoonful of Mellin's Food.
 A pinch of salt.

To prepare—

Dissolve the Mellin's Food in a little warm water ; put the milk into a double saucepan and allow it to become scalding hot ; beat the eggs thoroughly and add the scalding milk to them gradually ; then return the whole to the double boiler, add the Mellin's Food, sugar

and salt, and cook for two or three minutes, stirring constantly. This can be varied by beating the white and yolk of the egg separately; proceed as above, only reserving the stiffly-beaten white, and stir into the custard just before taking from the fire.

11.—CUSTARD PUDDING.

Ingredients:—One teacupful of fresh milk.
Two eggs.
One tablespoonful of sugar.
One tablespoonful of Mellin's Food.
A pinch of salt.

To prepare—

Beat the eggs slightly in a basin, add the milk, sugar and Mellin's Food; pour into a buttered pie dish and bake in a moderate oven for thirty minutes. If quickly baked it will become full of holes and watery. It must not boil.

12.—CUSTARD PUDDING.

Ingredients:—Two cups of fresh milk.
Four eggs.
One tablespoonful of sugar.
Two tablespoonfuls of Mellin's Food.
A pinch of salt.

To prepare—

Beat the eggs slightly, add the sugar and Mellin's Food, and whip them together until smooth and creamy. Stir the milk (salted very slightly), pour into a dish and set this in a dripping-pan full of boiling water until the middle of the custard is "set"; take directly from the oven; eat cold.

13.—TAPIOCA CREAM.

Ingredients:—Two tablespoonfuls of pearl tapioca.
 One pint of milk.
 Four eggs.
 Two tablespoonfuls of Mellin's Food.
 A little salt.

To prepare—

Pick over and wash the tapioca and soak in warm water until it has thoroughly softened; then add the milk and boil in a double saucepan until the tapioca is transparent; beat the yolks of the eggs and the Mellin's Food together, turn the boiling tapioca upon them and return to the fire for three or four minutes; take from the fire, add the whites of the eggs beaten very stiff and mix thoroughly. If two eggs only be used, the cream will still be very palatable.

14.—RICE MILK.

Ingredients:—Two tablepoonfuls of rice.
 Two tablespoonfuls of Mellin's Food.
 Two coffee cups (one pint) of milk.
 One tablespoonful of sugar.
 One-half teaspoonful of salt.

To prepare—

Wash the rice and put with the milk and salt into a double saucepan; cook until the rice is very soft and has absorbed most of the milk; when almost done, add the Mellin's Food and the sugar dissolved in a little hot water.

15.—MILK JELLY.

Ingredients :—Half-an-ounce of sheet gelatine.
 One pint of milk.
 One dessertspoonful of sugar.
 Two tablespoonfuls of Mellin's Food.
 A strip of lemon rind.

To prepare—

Place the lemon rind in the milk in a small enamelled saucepan and bring it carefully to the boiling point; when boiling, pour it on to the gelatine in a basin and stir gently until the whole of the gelatine is dissolved; then add the Mellin's Food and sugar and stir again until the whole has the consistency of cream; set in moulds previously rinsed in cold water; when firm, dip the moulds quickly into hot and then into cold water and turn out for use. Unless the milk jelly is allowed to partly thicken before being placed in the moulds it will separate out.

16.—RICE JELLY.

Ingredients :—One-half teacup of rice.
 Three teacups of cold water.
 One teacup of fresh milk.
 One-fourth teaspoonful of salt.
 Piece of soda not larger than a pea,
 dropped into the milk.

To prepare—

Wash the rice and then soak it for four hours in just enough water to cover it; add, without draining, to the cold water; bring to the boil in a double saucepan and cook until the rice is broken all to pieces and the water reduced to half the original quantity; add the milk and simmer (covered) for half-an-hour; strain through coarse muslin, pressing and twisting *hard*; sweeten slightly and use when it has cooled sufficiently.

17.—OAT JELLY.

Ingredients :—Half-a-teacupful of coarse oatmeal.
One quart of water.

To prepare—

Soak the oatmeal in one quart of cold water for twelve hours ; at the end of this time boil down to one pint and strain through fine muslin while hot ; keep the resulting jelly on ice until needed. Serve with Mellin's Food sprinkled over.

18.—RICE PUDDING.

Ingredients :—Three tablespoonfuls of rice soaked three hours in cold water
Two cups of milk.
A little salt.
Two beaten eggs.

To prepare—

Drain the rice in a colander lined with a piece of coarse cloth, and put it in a double saucepan with enough cold water to cover it ; add the salt ; cover closely and steam until soft, shaking up the inner kettle now and then but never putting a spoon into it. When rice is cooked in this way each grain will keep its shape and be separate from the rest. Try one to see if it is quite tender before taking the vessel from the fire. Should the water not be entirely absorbed, drain off what is left ; shake up the rice that it may lie lightly and loosely, and pour in the milk. This (warm but not scalding) should be ready in another saucepan. Return to the fire ; simmer fifteen minutes ; boil up well once ; turn into a bowl and beat in the frothed eggs at once. Sprinkle over the surface, when served, Mellin's Food to flavour, or eat with cream and sugar.

19.—MELLIN'S FOOD.

Ingredients :—Four teaspoonfuls of Mellin's Food.
Six fluid ounces (12 tablespoonfuls) milk.
Two fluid ounces of water.

To prepare—

Mix the Mellin's Food with warm water ; then add the milk, with constant stirring.

20.—OATMEAL PORRIDGE (ROLLED OATS).

Ingredients :—One breakfastcupful of boiling water.
Half-a-teacupful of rolled oats.
Half-a-teaspoonful of salt.

To prepare—

To one breakfastcupful of boiling water add half-a-teaspoonful of salt and half-a-cupful of rolled oats. Boil two hours in a double saucepan and strain through a sieve. For a child about fifteen months old, two or three tablespoonfuls of the strained part is enough for one meal, the rest being saved to heat for another meal. To the part used, add enough milk with a little Mellin's Food dissolved in it to make a soft oatmeal pulp. For a child two or three years old, three or four tablespoonfuls of the strained oatmeal may be given at a meal. Add just enough milk with Mellin's Food to soften it.

21.—OATMEAL PORRIDGE.

Ingredients :—Two teacupfuls of boiling water.
 Half-a-teacupful of coarse oatmeal.
 Half-a-teaspoonful of salt.

To prepare—

To two teacupfuls of boiling water add one half-teaspoonful of salt and one half-teacup of coarse oatmeal; boil four hours in a double saucepan and strain through a sieve. For a child about fifteen months old, two or three teaspoonfuls of the strained part is enough for one meal, the rest being saved to heat for another meal. To the part used, add enough milk with a little Mellin's Food dissolved in it to make a soft oatmeal pulp. For a child two or three years old, three or four tablespoonfuls of the strained oatmeal may be given at a meal. Add just enough milk with Mellin's Food to soften it.

22.—SOFT BOILED EGGS.

To prepare—

Drop two eggs into enough boiling water to cover them; let them stand on the back of the stove where the water will keep hot, but not boil for eight minutes. An egg, to be properly cooked, should never be boiled in boiling water, as the white hardens unevenly before the yolk is cooked. The yolk and white should be of jelly-like consistency.

23.—DRIED BREAD.

To prepare—

Either stale or fresh bread may be used; it is cut in thin slices and placed in the oven with the door opened and quickly dried until it is crisp but not browned. It is in many respects the best form in which to give bread to young children.

24.—CHICKEN, VEAL AND MUTTON BROTHS.

To prepare—

The fleshy part of the knuckle of veal ; a chicken, bones and all chopped up ; or two pounds of the scrag end of neck of mutton, added to two pints of water with a little salt and boiled two hours and strained : all make excellent broths. Cool thoroughly, then carefully remove the fat by skimming with a spoon or a clean piece of blotting paper, and heat again when required for use. Pearl barley, rice or vermicelli boiled separately till quite soft may be added when either of the broths is heated for use.

25.—BEEF TEA.

*Ingredients:—*Quarter-pound of gravy beef.
One gill of water.

To prepare—

Cut the beef very finely, or tear it into shreds, removing all skin and fat. Then place it in a stone jar with one gill of water, place the lid on the jar, and tie a piece of paper over it. Stand the jar in a saucepan of cold water, place the saucepan over a fire and bring the water to the boiling point, allowing the jar to remain thus for three hours. At the end of this time salt to taste and pour the beef tea into a cup for use.

26.—SCRAPED MEAT.

To prepare—

Take a piece of raw juicy steak and scrape away the pulp of the meat with a dull knife ; place this meat pulp (as much as is needed) on a piece of toast or stale bread and bake in the oven for five minutes ; flavour with salt and a small amount of butter ; it may be given either with or without the toast.

27.—BEEF TEA.

Ingredients:—Half-pound of gravy beef.
Half-pint of water.
A pinch of salt.

To prepare—

Cut the beef into very small pieces, taking care to remove all fat and skin, and place in a saucepan with half-a-pint of cold water and a good pinch of salt. Place the saucepan on the fire and stir the contents until almost boiling, then remove to the side of the fire and allow to simmer gently for one hour; after this pour out the beef tea and let it cool, removing any fat before using. Beef tea must not be allowed to boil during preparation.

28.—BAKED APPLES WITH MELLIN'S FOOD.

To prepare—

Pare and core the apples, fill the cavities with Mellin's Food (dry), scatter sugar over them, put a little boiling water in the baking dish and bake in a quick oven.

29.—APPLE STEW.

To prepare—

Pare and slice three or four ripe apples, pack them into a porcelain dish, cover barely with cold water to prevent scorching, cook gently in the oven until they are very soft. Turn out into a bowl and mash with a wooden spoon, press with the same through a colander and sweeten to taste with sugar or Mellin's Food while warm.

Apple stew prepared as described above is wholesome, pleasant to the taste and slightly laxative to the bowels. It should be eaten with bread and butter or rice pudding.

CHAPTER XVII.

SIMPLE DRINKS FOR CHILDREN AND ADULTS.

1.—WHITE OF EGG AND SODA WATER.

Ingredients :—Two whites of eggs.
Half-a-tumbler of soda water.
Mellin's Food to flavour.

To prepare—

Dissolve the Mellin's Food in the least possible quantity of warm water; add the whites of eggs and whip into a froth; pour into a glass and add the soda water.

2.—MILK AND SODA WATER.

Ingredients :—Half-a-tumbler of milk.
Half-a-tumbler of soda water.

To prepare—

Pour the milk into a tumbler and fill up with soda water. This renders the milk more digestible. The soda water tends to divide the casein of the milk into fine flakes and thus prevents the formation of hard indigestible clods of curd.

3.—LEMONADE.

Ingredients :—Quarter pound of sugar.
One fine juicy lemon.

To prepare—

Remove in a thin layer the outer rind from the lemon ; then remove the white pulp beneath, which latter is to be thrown away. Well pound up the lemon rind and pour it on to the strained juice of the fruit. Press the mixture into a jar, and when required for use, dissolve a tablespoonful of it in a glass of water. Or for immediate use the mixture may be placed in a jug and a pint of boiling water poured upon it ; when cool it is ready for use.

4.—ORANGEADE.

Ingredients :—Two juicy oranges.
One juicy lemon.
Six lumps of sugar.
One pint of boiling water.

To prepare—

Thinly peel the lemon, squeeze the juice from the oranges and the lemon into a jug, add the lemon peel and sugar, and pour on the boiling water. Cover and strain when cold.

5.—TOAST WATER.

Ingredients :—One crust of bread, toasted deep brown and hard.
One pint of cold water.

To prepare—

Place the toasted bread in a jug, add fresh cold water and let it stand for one hour. Strain, and it is then ready for use.

This drink should be clear and of brownish colour.

6.—RICE WATER.

Ingredients :—Two ounces of rice.
One quart of water.
Lemon peel.

To prepare—

Wash well the rice with cold water, then soak for three hours in a quart of water kept at tepid temperature; afterwards gently boil the whole for one hour and then strain off the liquid. Place aside to cool and flavour with orange or lemon peel, cloves, or cinnamon for use.

This drink is very useful in cases of diarrhoea.

7.—APPLE WATER.

Ingredients :—Six juicy apples.
White sugar.
One quart of boiling water.

To prepare—

Clean six juicy apples, and without removing peel or core, cut them into thin slices. Place in a large jug and add a few pieces of lemon rind, cut very thinly; pour on one quart of boiling water, and add white sugar to sweeten. Strain when cold.

8.—GELATINE AND MILK.

Ingredients :—Quarter-ounce of gelatine.
Quarter-pint of hot barley water.
Half-ounce of best loaf sugar.
Half-pint of hot milk.

To prepare—

Place the gelatine in a jug. Then pour the boiling barley water on to the loaf sugar in a separate vessel. When the sugar has dissolved, and while the mixture is still very hot, pour it on to the gelatine. Then add the hot milk and stir well.

This mixture is very useful in cases of vomiting and diarrhoea, and is best given cold.

9.—ALMOND WATER.

Ingredients :—One ounce of compound powder of almonds.
Half-pint of hot water.

To prepare—

Place the compound powder of almonds, which may be obtained from any chemist, in a clean jug, and pour on the hot water, which should not be boiling. Allow to stand for fifteen minutes, and then strain through muslin.

This will be found a very useful and agreeable drink in cases of cold, bronchitis, or simple lung troubles.

10.—LINSEED TEA.

Ingredients :—Half-ounce of whole linseed.
Half-ounce of powdered white sugar.
Quarter-ounce of liquorice root.
A few drops of lemon juice.
One pint of boiling water.

To prepare

The whole linseed (not linseed meal), the sugar and liquorice root should be placed in a jug, and then one pint of boiling water should be poured over the whole. The jug should then be placed near the fire for four hours and afterwards removed. When the contents are cool, the clear liquor should be strained off and a few drops of lemon juice added, sufficient to impart an agreeable flavour.

This mixture will be found very soothing in cases of severe cough or chest troubles. It should be given warm.

MELLIN'S FOOD AND ICED SODA WATER.

Mellin's Food—In a large glass mix one tablespoonful with sufficient cold boiled water to produce a thin paste. Pour on the soda water and stir the mixture.

This will be found a most refreshing and sustaining food beverage during the hot season, and it is taken with relish and advantage when other foods are repugnant.

For those suffering from the effects of sunstroke or typhoid this preparation has been used with the greatest benefit.

MELLIN'S FOOD WITH SODA AND MILK.

Milk, one-third pint.

Soda water, two-thirds pint.

Mellin's Food, one tablespoonful.

Well stir the Mellin's Food with milk until the whole of the powder is dissolved, and then add iced soda water.

MELLIN'S FOOD FOR DYSPEPTICS.

Mellin's Food—Two tablespoonfuls.

Milk—Four fluid ounces.

Water—Sufficient to produce a paste with the Mellin's Food before mixing.

Cocoa—One heaping teaspoonful.

To be taken morning and evening.

FOR THE AILING.

Mellin's Food.—One tablespoonful.

Milk.—One half-pint.

Eggs.—Three new-laid, well beaten up with the milk.

Salt.—To flavour,

FOR NURSING MOTHERS.

Mellin's Food—One tablespoonful.

Milk—Four fluid ounces.

Water—Enough to make the Mellin's Food into a paste.

Egg—One new-laid, beaten up with the milk.

To be taken three times a day, or more frequently.

FOR INVALIDS.

Mellin's Food—One tablespoonful.

Milk—Four fluid ounces.

Water—Sufficient to make the Mellin's Food into a paste.

Sweet Cream—Two tablespoonfuls.

Egg—One, beaten up with the milk.

FOR THE AGED.

Mellin's Food—Two tablespoonfuls.

Milk—Four fluid ounces.

Water—Sufficient to make a paste with the Mellin's Food.

IN CASES OF CHOLERA INFANTUM AND
TYPHOID.

Mellin's Food—Three teaspoonfuls.

Water—Three fluid ounces.

To be given cold at frequent intervals.

OTHER USES OF MELLIN'S FOOD.

MELLIN'S FOOD may, with advantage, also be added to porridge, arrowroot, sago, rice, and other farinaceous food, to increase their nutritive value and digestibility. The food value of cocoa, coffee and tea may be increased by the addition of Mellin's Food.

CHAPTER XVIII.

USEFUL RECIPES.

WHEY (ABOUT ONE PINT).

To prepare—

Place one pint of fresh milk in an enamelled saucepan, and warm it to blood heat (about 98° F. to 100° F.); then pour into a clean jug. Next add as much rennet powder as will stand on a threepenny piece, or one teaspoonful of rennet essence may be used instead. Stir well, stand in a warm place until firmly clotted, break up the clot by stirring, and strain through fine muslin. The clear liquid is whey.

LIME-WATER (ONE PINT).

To prepare—

To one pint of cold boiled water in a clean jug add as much freshly-slaked lime* as will stand upon a sixpence. Stir the mixture thoroughly and stand aside for one hour; then pour off the clear liquid, taking care not to disturb the sediment at the bottom; or the milky mixture may be filtered through a piece of clean filter or white blotting-paper ten minutes after preparation. Preserve the solution in a well-stoppered bottle.

* The lime or lime-water may be obtained at any chemist's.

SACCHARINATED SOLUTION OF LIME.

To prepare—

Carefully grind together in a mortar two ounces of best powdered white sugar and one ounce of slaked lime. When thoroughly mixed, place the powder in a bottle and add a pint of boiled water. Well shake the mixture. Preserve the solution in a well-stoppered bottle.

Of this solution 15 minims would correspond in strength to a tablespoonful of lime-water.

BARLEY-WATER (ONE PINT).

To prepare—

Take three teaspoonfuls of pearl barley, wash it first with cold water and then with hot water; throw away the washings. Add one pint and a half of water and boil slowly down to about one pint, stirring occasionally. Strain when the boiling is completed. It is preferable to use a double boiler. A whole day's supply should not be made at one time, for the liquid soon turns sour and becomes unfit for use.

DIETETIC DONT'S.

1. DON'T allow a baby to suck a "comforter," or "dummy teat."

2. DON'T permit the baby to suck at any empty feeding bottle.

3. DON'T employ a long tube feeding bottle.

4. DON'T give the baby the feeding bottle or breast directly he cries—first be certain that the cry is really one of hunger.

5. DON'T give a baby food "between meals"; use every endeavour to induce regular habits in feeding.

6. DON'T allow a baby to feed rapidly or greedily—train the infant to swallow slowly.

7. DON'T give a baby who has not cut some teeth any kind of starchy food, such as would thicken warm milk or water. No such substances as cornflour, arrow-root, sago, biscuits or bread should be given.

8. DON'T give a baby skimmed milk, or milk that is not perfectly fresh.

9. DON'T feed a young infant exclusively for any length of time upon any diet from which fresh raw milk is excluded.

10. DON'T give the baby fever powders or sleeping draughts, save under medical advice.

11. DON'T allow a baby to have fragments of food prepared for adults.

12. DON'T permit a baby to have tea, coffee, beer, or any kind of stimulating liquor.

13.—DON'T give a young baby fruits of any kind—although the *juice* of ripe fruits may be given in small quantities.

WEIGHTS AND MEASURES.

MEASURES OF CAPACITY.

| | | |
|-----------|---------------------|--------------------------|
| 1 minim | = 1 drop. | |
| 1 drachm | = 1 teaspoonful | = $\frac{1}{8}$ chittack |
| 2 drachms | = 1 dessertspoonful | = $\frac{1}{4}$ „ |
| 4 drachms | = 1 tablespoonful | = $\frac{1}{2}$ „ |
| 60 minims | = 1 drachm (℥) | = $\frac{1}{8}$ „ |
| 8 drachms | = 1 ounce (℥) | = $\frac{1}{2}$ „ |
| 20 ounces | = 1 pint | = 10 „ |
| 4 gills | = 1 pint | = 10 „ |
| 2 pints | = 1 quart | = 1 $\frac{1}{4}$ seers. |

AVOIRDUPOIS WEIGHT.

| | | |
|------------|--------------------------------------|---------------------------|
| 16 drachms | = 1 ounce (437 $\frac{1}{2}$ grains) | = $\frac{1}{2}$ chittack. |
| 16 ounces | = 1 pound | = $\frac{1}{2}$ seer. |
| 14 pounds | = 1 stone | = 7 seers. |
| 28 „ | = 1 quarter | = 14 „ |

Standard Measure.

Popular Measure.

| | | | |
|-----|------------------------|-----|--------------------------------------|
| mi | One Minim | ... | 1 Drop |
| ℥i | One Drachm (60 Minims) | 1 | Teaspoonful |
| ℥ij | Two Drachms | ... | 2 Teaspoonfuls or 1 Dessert-spoonful |
| ℥iv | Four Drachms or | } | 4 Teaspoonfuls or 1 Table spoonful |
| ℥ss | Half a fluid ounce | | |
| ℥i | One fluid ounce | ... | 2 Tablespoonfuls |
| Oi | One pint (℥xx) | ... | 1 Pint |

Popular measures are very inaccurate, and if the dose of medicine is not marked on the bottle it should be measured in a medicine glass. Drops vary according to the thickness of the fluid. A teaspoon often contains ninety minims instead of sixty, and a tablespoon three-quarters of a fluid ounce instead of a half. A sherry wine-glass holds about two fluid ounces : a teacup, four to six : a breakfast cup, six to eight : and a tumbler, ten, or half-a-pint.

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